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THE VOLUME OF THE CIRCULATION AND ITS REGULATION BY THE VENOPRESSOR MECHANISM *

YANDELL HENDERSON, PH.D.

NEW HAVEN, CONN.

The volume of the circulation is the size of the blood stream pumped through the lungs and out to all the organs of the body by the heart. It is not the same thing as the total blood volume of the body. The blood volume is measured simply in liters or in liters per kilogram of body weight. The volume of the circulation is measured in liters of blood flow per minute.

It is merely a coincidence that in a resting man of average size the heart pumps each minute a volume which is about equal to all the blood in the body.[1] In small animals, with their high metabolism, the heart beats so rapidly and the volume of the circulation is so large that, as an average, each particle of blood goes round the circulation two or three times each minute. In large animals the heart beats more slowly and the circulation also is slower. In the horse during rest the volume pumped each minute is probably equal to about half the total blood volume, and on the average each particle of blood circulates only once in two minutes or more.

During physical exertion the heart rate is quickened and the strokes are probably also larger, so that the volume of the circulation is greatly increased. The blood volume of course remains unchanged. The blood in active circulation flows more rapidly; and in addition a considerable volume of blood, which was previously stagnant in such reservoirs as the spleen [2] and the liver,[3] is added to the stream. The circulation is thus enabled to carry the increased amount of oxygen required by the actively working muscles.

The factor of dominating importance in determining the volume of the circulation is the amount of oxygen consumed by the body. Most of the symptoms that develop in the various forms of heart disease are due to failure of the circulation to maintain its respiratory function, particularly the transportation of oxygen from the lungs to the tissues. In the athlete, as in the cardiac patient, the limit on physical exertion is set by the capacity of the heart to pump a sufficient blood stream to supply the oxygen that the active tissues demand.

The volume of the circulation during rest is closely related to the total oxygen consumption of the body; for the blood stream under basal conditions is about twenty times as large as the volume of oxygen absorbed in the lungs each minute. The volume of air drawn into the lungs each minute and the volume of the blood pumped through the lungs in that time are approximately equal. During bodily rest both are about 5 liters a minute. The air loses about 5 per cent of its volume of oxygen and the blood in taking up this amount of oxygen gains about 5 volumes per cent of that gas. During physical activity, however, the volume of air breathed increases much more than the volume of blood pumped. The pulmonary ventilation may increase to 50 liters or more a minute, while the circulation increases to 20 or 25 liters. As an average, each corpuscle then makes the round of the circulation three or four times a minute. The air still loses about 5 per cent of its volume of oxygen, while the blood, if its stream is only half as large as the volume of air, would gain 10 volumes per cent of oxygen. These, broadly speaking, are the conclusions supported by evidence from many methods and numerous investigators.

The correctness of this estimate of the volume of the circulation during rest has been confirmed recently by Baumann and Lauter,[4] who, in checking the ethyl iodide method, found that without injury to the patient blood may be withdrawn from the right side of the heart through a hypodermic needle inserted through the body wall, and by Klein,[5] who has inserted a catheter through the jugular vein. When this blood is analyzed, it is found to contain about 5 volumes per cent less oxygen and 4 volumes per cent more carbon dioxide than blood taken simultaneously from an artery. These figures, combined with those for the oxygen absorbed and the carbon dioxide exhaled from the lungs, give all the data necessary for calculating the volume of the circulation by the so-called Fick principle used in animal experimentation.

While it is satisfactory to have this knowledge, it is extremely improbable that the method of heart puncture in man will become a common procedure for diagnosis or investigation. There is still great need, therefore, for a method for the indirect estimation of the volume of the circulation in man. Such measurements would probably be as significant and instructive regarding

* From the Laboratory of Applied Physiology, Sheffield Scientific School, Yale University.

* Read before the Section on Pathology and Physiology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

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2. Barcroft, Joseph: Recent Knowledge of the Spleen, Lancet **1**: 319 (Feb. 14) 1925; Some Recent Work on the Functions of the Spleen, ibid. **1**: 544 (March 13) 1926.

3. Mautner, H., and Pick, E. P.: Ueber die durch Schockgifte erzeugten Zirkulationsveränderungen: III. Der Einfluss der Leber auf Blutdruck und Schlagvolumen, Arch. f. exper. Path. u. Pharmakol. **142**: 271, 1929.

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conditions of health and disease as are present determinations of arterial pressure and the electrocardiogram.

MEASUREMENT OF THE CIRCULATION

There have been many attempts to develop an indirect method of measuring the circulation. The pressures of oxygen and of carbon dioxide in the arterial blood are the same as in the alveolar air of the lungs; and this air, as Haldane and his collaborators [6] showed, can be obtained by deep expiration. To determine the gas pressures in the venous blood returning to the lungs is more difficult. If air or, better, a mixture of oxygen and carbon dioxide is breathed, it tends to assume the gas pressures in the venous blood coming to the lungs. For technical reasons no reliable figure for the venous oxygen is obtainable in this way. But, as Henderson and Prince [7] showed, a fairly definite figure for the "virtual venous carbon dioxide pressure" is obtainable on trained subjects. Methods for estimating the volume of the circulation by means of these two procedures, for "arterial air" and "venous air," combined with determinations of the respiratory exchange of oxygen and carbon dioxide, have been extensively used in recent years and have produced valuable results.[8] All such methods have, however, the great practical defect that they require the active cooperation of the patient who is being observed. They seem, therefore, to afford little promise for clinical use in the wide variety of problems now urgently demanding study.

The same limitation applies to most of the methods that have been suggested for estimating the volume of the circulation by inhalation of nitrous oxide, ethylene and acetylene.[9] With all such methods the object is to determine how much of the gas is absorbed from the lungs and what concentration the blood holds. The observation is considered to be vitiated if it lasts so long that some of the blood that has once passed through the lungs returns holding some of the gas in solution. The whole procedure of inhalation and sampling is therefore completed in a fraction of a minute; and for this the active and even skilled cooperation of the subject is required.

One gas or vapor, namely, ethyl iodide, has a property which to some extent makes it usable without the cooperation of the subject or patient. It is decomposed in the body. If its decomposition were complete and instantaneous, so that none of the gas returned to the lungs in the venous blood, ethyl iodide would afford the ideal means for indirect measurement of the circulation for clinical purposes. Henderson and Haggard [10] believed that such was the case, but a large amount of discussion and investigation by others has shown that nature has not provided in ethyl iodide quite so perfect a means of obtaining the object in view. While the substance is decomposed in the body, the decomposition is not instantaneous. Starr and Gamble [11] have shown, however, that by rebreathing, even without the cooperation of the subject, a sample of lung air in equilibrium with the venous blood in respect to ethyl iodide is easily obtainable. Along this line a method free from theoretical objection and clinically applicable is now being developed by Starr and his collaborators.[12]

Even in its initial form the ethyl iodide method has found extensive and highly instructive clinical application in this country [13] and in Germany.[14] The figures for the relative efficiency of the circulation in health and in cardiac and other diseases obtained by this method agree satisfactorily with the results of clinical examination. Doubtless, in time, either by means of ethyl iodide or by some other technic, the problem of measuring the volume of the circulation will be solved as effectively as has been that of measuring arterial pressure. It will unlock many secrets.

THE FACTOR DETERMINING THE VOLUME OF THE CIRCULATION

I will turn now to the broader questions: What determines and regulates the volume of the circulation in all the wide variations of bodily activity in health? What is the cause of the decreased circulation after surgical operations without hemorrhage, after physical suffering and in illness?

Twenty years ago the answer would have been: The vigor of the heart's activity determines the volume of the blood stream. A "weak heart action" is still spoken of in many conditions of acute disease or after major surgical operations or hemorrhage. But the development of physiology has demonstrated that the heart itself is not at fault; in reality, it is the volume of the venous return to the right side of the heart that is deficient. The deficiency and failure that generally bring the circulation to a standstill and thus lead to the vast majority of all deaths among mankind lie in a factor which many years ago I named the "venopressor mechanism." [15]

Unfortunately, I had to stop with a name; and no one has yet adequately explained exactly what the name stands for. I propose now to attempt again to define it.

The circulation should, I think, be conceived, not as a balance of two mechanical factors only, the heart and the vasomotor system, but rather of three factors. It is supported like a tripod that falls if any one of its three legs fails. The heart pumps the blood onward; the vasomotor nervous system regulates the caliber of the finer blood vessels and thus determines the arterial resistance and pressure. But it is chiefly a third factor, the venopressor mechanism, that pushes the blood back through the veins toward the right side of the heart. This third factor is augmented to support the increased

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circulation in an athlete during exertion. It is depressed in illness and is the chief cause of the decreased circulation in acute disease. Certainly the heart can pump onward only such a volume as the venous return brings to it.

The discovery that there must be some venopressor mechanism came about in this way: Harvey, in describing the heart beat, said "The auricle contracts and forces the blood it contains into the ventricle. The ventricle then contracts and ejects the blood into the arteries." In studying the volume curve of the heart many years ago, however, I [16] found that the ventricles are filled nearly full by venous pressure even before the auricle contracts. This observation led on to prolonged study by me, and then by many others, of that process by which, as Harvey says, "the auricles are filled as magazines or reservoirs of the blood, which is tending spontaneously and, by the motion of the veins, under pressure toward the center." Harvey recognized the venous return.

A clear-cut demonstration of the action of the venopressor mechanism, whatever it is, is afforded by an experiment recently described by Riml.[17] If the chest of a rabbit is opened and the pulmonary artery is clamped, the pressure in the vena cava rises within a minute to 10 cm. of water. If the vena cava is opened, 50 per cent of all the blood in the body flows out quickly, even when opposed by a pressure of a centimeter of water. What is the nature of the force which thus squeezes the blood back toward the heart? In the textbooks the "vis a tergo," or push from behind, imparted by the heart to the blood in the arteries, and from the arteries through the capillaries to the veins, is always given as the force sending blood back to the heart. But in this experiment the fact that the pulmonary artery is clamped effectually eliminates the push of blood into the arteries by the heart. There is here involved some elastic contraction, some pressure on the blood vessels, that squeezes the blood out of the tissues of the body and thus forces it on through the veins toward the heart.

Doubtless the vasomotor nervous system plays a part in the venous return, for there are nerves to veins as well as to arteries. The spleen has been shown by Barcroft [2] to be a reservoir from which blood is thrown into active circulation during physical exertion. A similar action of the liver has been demonstrated by Mautner and Pick.[3] But something more is needed to effect the enormous variation in the venous stream to the heart seen, at one extreme, in an athlete under great exertion and, at the other extreme, in a patient in profound physical depression. What is it?

After a search that has lasted for more than a quarter of a century, I have recently come to the conviction that the venous return to the heart is chiefly determined by the general tonus of all the skeletal muscles of the body, more especially of the abdominal muscles and particularly the diaphragm, as well as the nonstriated musculature of the alimentary canal; and that the element which influences this tonus to exert a greater or lesser pressure on all the tissues of the body and on the blood which they contain, driving it back toward the heart, is the state and control of respiration in its broadest sense. The circulation in its chief function, the transport of gases, is essentially a part of respiration. In general, the degree of activity of respiration, the general tonus of the body and the volume of the circulation vary together. These three functions increase and decrease in close relation to one another, alike in the normal man at rest and under physical exertion, as well as in the sick and the dying. Accordingly, it is found that in the physical depression after major surgical operations certain conditions occur simultaneously: the diaphragm is relaxed, the vital capacity of the lungs is decreased, the tonus of the skeletal muscles and alimentary canal is lowered, and the volume of the circulation is diminished. Recent clinical experience demonstrates that under such stimulation of respiration as is induced by inhalation of carbon dioxide all these aspects of depression improve together: respiration, general muscle tonus and the circulation are restored toward normal conditions.[18]

In the daily life of a normal man such exercise as a walk induces for a time a higher muscle tonus, a more active respiration and a fuller circulation. Even as this paper was being written observations by others have appeared which seem to accord with the general conception that these effects are fundamentally related. King, Blair and Garrey [19] find that with each inspiration such indexes of muscular tonus as the knee jerk and achilles reflex are increased in intensity. Barcroft and Verzár [20] find that under exposure to cold the pulse rate is increased with each access of shivering. Presumably the volume of the circulation is increased with the pulse. Shivering is excessive tonus.

Especially significant is the fact, demonstrated by Hess,[21] that the movements of respiration do not consist merely in alternate contraction and relaxation of the thoracic muscles but that, at each breath, these muscles pass from one tonus level to another and back again. When respiration is depressed, as after anesthesia and operation, muscular tonus is low, the thorax is collapsed, the diaphragm is relaxed and the lungs are deflated. When respiration is stimulated by physical exercise or by inhalation of carbon dioxide, muscular tonus is high, the thorax is expanded and the lungs are fully inflated.

Tissue tonus is one of the most fundamental properties of life. It keeps the fluids within the tissues at a pressure above that of the outside world. This property is intimately associated with tissue respiration. It is probably the factor which in primitive forms of life produces the first elementary circulation, even before a heart is developed and long before the vasomotor nervous system appears. In this aspect the venopressor mechanism is the most elementary and fundamental factor in the circulation.

In the medicine of our forefathers a generation or two ago the drug which more than any other was used to support and improve the circulation was strychnine. In its action on the reflex centers of the nervous system strychnine is, in a sense that no other drug

16. Henderson, Yandell: The Volume Curve of the Ventricles of the Mammalian Heart, and the Significance of This Curve in Respect to the Mechanics of the Heart-Beat and the Filling of the Ventricles, Am. J. Physiol. **16:** 325, 1906.

17. Riml, O.: Ueber das Verhalten des Blutdruckes in der Vena cava bei plötzlichem Zirkulationsstillstande, Arch. f. exper. Path. u. Pharmakol. **139:** 231, 1929.

18. Henderson, Yandell: Acapnia as a Factor in Postoperative Shock, Atelectasis and Pneumonia, J. A. M. A. **95:** 572 (Aug. 23) 1930; Fatal Apnea and the Shock Problem, Bull. Johns Hopkins Hosp. **21:** 235 (Aug.) 1910.

19. King, C. E.; Blair, E. A., and Garrey, W. E.: The Inspiratory Augmentation of Proprioceptive Reflexes; A Study of the Knee Jerk and the Achilles Reflex, Am. J. Physiol. **97:** 329 (May) 1931.

20. Barcroft, Joseph; and Verzár, F.: The Effect of Exposure to Cold on the Pulse Rate and Respiration of Man, J. Physiol. **71:** 373 (April 24) 1931.

21. Hess, W. R.: Kritik der Hering-Breuerschen Lehre von der Selbststeuerung der Atmung, Arch. f. d. ges. Physiol. **226:** 198, 1930; Die Regulierung der Atmung, Gleichzeitig ein Beitrag zur Physiologie des vegetativen Nervensystems, Leipzig, Georg Thieme, 1931.

attains, a true tonic, a stimulant for muscular tonus. Increased tonus increases the general respiratory metabolism of the body; and by the tonic pressure of the muscles on their own substance and on all the other tissues, except the skin, this tonus aids the venous return to the heart. If the general idea here presented is correct, strychnine, much more than epinephrine, with its merely momentary influence on vasomotor nerve endings, is the drug to support a depressed circulation.

In normal life the increase in the volume of the circulation at the beginning of physical exercise depends largely on the active contraction of the skeletal muscles pumping blood onward, raising venous pressure and supplying a larger volume to the right side of the heart. Simultaneously, and largely under the same mode of stimulation, respiration is increased and its muscles are contracted. The mean position of the diaphragm is lowered, expanding the thorax, compressing the abdominal viscera, increasing the difference of pressure in these two body cavities and augmenting the venous blood stream to the heart.

Thus three factors essential to the dynamics of the body—muscular contraction, respiration and the circulation—are coordinated in health. So also they generally fail together after illness and in postoperative depression; then muscular tonus is low, respiration shallow, the diaphragm relaxed, and the venous stream to the right side of the heart diminished. Such parallelism indicates a fundamental connection between the functions concerned and suggests therapeutic applications of far reaching importance.

CONCLUSION

The volume of the circulation, or amount of blood pumped each minute by the heart, is about twenty times as large as the volume of oxygen absorbed from the lungs in the same period. In a normal man at rest, it is a stream that is equal each minute to the entire blood volume of the body. It is much larger during physical activity, and much smaller during illness and postoperative depression.

Investigations in recent years have yielded knowledge of great general value regarding the circulation in health and disease, but not as yet an entirely satisfactory clinical method for measuring its volume. Such a method will afford information as instructive as that now obtained by means of the sphygmomanometer or the electrocardiograph.

The factor that chiefly determines the volume of the circulation is the venous return to the right side of the heart. This factor conditions both increase and decrease of the circulation. During physical exercise the heart can pump onward through the lungs and into the arteries only the volume that comes to it through the veins. In illness a failing heart is generally due rather to an inadequate venous return of blood than to depression of the strength of the heart itself.

The blood is not merely pushed back to the right side of the heart by the pressure transmitted from the left side of the heart through the arteries and capillaries to the veins; nor is the venous return due in the main to the vasomotor control of the blood vessels. According to the view here presented, this vitally important third factor in the circulation is maintained and varied chiefly by quite another force; namely, the general tonus of the musculature of the body. This tonus, by the pressure which it exerts on the tissues and the blood within them, and especially on the abdominal viscera, is the force which in health maintains and varies the volume of the venous return. In illness the depression of muscular tonus permits a stagnation of blood in the tissues and a consequent failure of the venous return.

Both in health and in illness the general muscular tonus, the volume of the circulation and the activity of respiration are increased and decreased in closely parallel relation and largely by the same influences.

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ABSTRACT OF DISCUSSION

DR. ISAAC STARR, JR., Philadelphia: There can be no doubt of the importance of the problems suggested by Professor Henderson. One thinks of the heart as a pump and one assigns no other function to it. To calculate the heart's work, one must know its output and the blood pressure. Certainly the problem of ascertaining cardiac work in clinical conditions is fundamental to a complete understanding of the heart in health and in disease. But I feel convinced that much work on this subject has been premature. The pertinent question is, Are the methods at present available adequate to attack this problem clinically? I am beginning to feel encouraged. A few years ago various methods gave irregular results on the same subject under similar conditions. There was no agreement as to the average basal cardiac output. Now there are methods available which both give consistent results on certain subjects and show good agreement as regards the average level of cardiac output of normal young men in the basal condition. It is reassuring when methods which differ so widely that they have practically nothing in common, as the cardiac puncture method of Lauter and Baumann, the Marshall and Grollman modification of the Krogh and Lindhard method, my modification of the ethyl iodide method, and certain other methods, all indicate an average basal cardiac output of normal young adult males of about 4 liters per minute or 2 liters per square meter of body surface per minute. I doubt whether the cardiac puncture method will have general applicability but this bold procedure has done a great deal to clear the air. The method employs the Fick principle directly and therefore older methods employing it indirectly and yielding different results should be reinvestigated. Therefore I feel that the time has come when the investigation of clinical problems must be attempted. In dealing with patients, new difficulties will be encountered. Certain types of problems cannot yet be investigated by the gas methods; namely, those conditions in which equilibrium between gas tension in alveoli and blood is disturbed, or in which alveolar air cannot be obtained. In order to make the results comparable, it will probably be necessary to determine the cardiac output of patients in the basal condition. I think that many working in this field are beginning to realize the difficulties of holding the cardiac output at the basal level. I am inclined to think that the inconsistencies of the results obtained by some methods in the past may be due not to any fault in estimating cardiac output but rather to the fact that the excitement incident to the cooperation of the subject changed his cardiac output.

DR. J. A. E. EYSTER, Madison, Wis.: For years I have been interested in a different method for estimating cardiac output. Teleroentgenograms of approximately one-fiftieth second exposure are made during the periods when the heart is at its maximum and minimum volumes. The volume of the heart is estimated at these two instants from the plane area of the silhouettes and the difference between these volumes represents approximately the stroke volume or the amount of blood forced out in a single beat. The technical difficulties of the method are rather great and there are in addition certain theoretical objections, but it has the advantage that it does not require the cooperation of the subject. It is interesting, however, that the results obtained by this method check quite closely with those obtained by the gasometric method. In forty normal young adults I have found an average output of 1.9 cc. per kilogram per beat from the two ventricles, or 0.9 cc. from each ventricle, which is close to the figure given by Dr. Henderson.

DR. L. N. KATZ, Chicago: It is not clearly appreciated, I think, that the methods of determining rate of outflow are not yet applicable to all clinical conditions. The clinician interested in determining the blood flow in heart failure will find the methods unsuitable as they stand at present. This is particularly true of the methods requiring rebreathing, because an equilibrium of the gases in the alveoli and the sampling bag is not reached in the period of time set for the test. The clinician should realize, therefore, that the methods need considerable improvement before they can be applied to clinical patients with heart failure.

DR. CARL J. WIGGERS, Cleveland: My practical experience with such methods is nil and I can judge them only by applying the intelligence of the average physiologist. It is my belief that they all fall into a category of being only relatively exact. I am sure the speakers will all agree with that. This does not prevent one from continuing his efforts to get more exact methods. There is perhaps the same situation in basal metabolism studies, my opinion being that they also are not as exact as most physicians are inclined to believe. I speak a word of appreciation for the venopressor concept that Dr. Henderson introduced many years ago. Dr. Henderson has made a number of valuable contributions to practical physiology. Among these is the concept of the venopressor mechanism, in which I thoroughly believe. The amount of blood returned to the heart is an important factor in determining how much the heart pumps out, and though there still are minor differences of opinion as to just how this operates, I am thoroughly convinced that it is an extremely important mechanism, which physicians must keep in mind. Recently it occurred to me that there might possibly be some specific effect of carbon dioxide on the heart muscle, that it might either stimulate the heart muscle like digitalis, for example, or that it might depress it. A year or two ago I published the results of a series of investigations in which all the conditions of the heart were kept the same, the heart rate, the venous pressure and the arterial resistance. I could find absolutely no direct effect of carbon dioxide on the heart. It neither stimulates nor depresses the heart. Hence I reached the conclusion that all the effects that it produces in exercise probably operate through this venopressor mechanism, the conception of which was evolved by Dr. Henderson.

DR. D. C. SUTTON, Chicago: I believe that the effect of muscle tone is an extremely important thing from a clinical point of view. I think all physiologists who work in the clinic are able to appreciate the fact that not only in shock but also in actual cardiac failure from different forms of heart disease the general muscle tone plays a large part in the functioning of the heart. I should like to ask Dr. Henderson what suggestions he might have to produce muscle tone artificially and whether carbon dioxide may not have a direct effect on the heart muscle. In moderate degrees of decompensation, exercises of various types greatly increase the effectiveness of the heart.

DR. H. C. BAZETT, Philadelphia: There is one question I should like to ask Dr. Henderson. I am enthusiastic about his ideas of the venopressor mechanism. But if an individual is exposed to heat, there is a tremendous muscular relaxation. There is a relaxation of all the veins that are superficial, and yet as far as data are available, the circulation rate is increased some 20 to 30 per cent. I wonder whether he has any information as to the effects of temperature on the deeper veins as opposed to more superficial veins.

DR. A. C. IVY, Chicago: There is one question I should like to ask Dr. Henderson. Is it possible, as he mentioned, that we shall have no readily available method for following cardiac output in patients? It is a general clinical impression that patients react differently to an anesthetic and to surgical procedures. If the venopressor mechanism plays an important rôle, is it not possible that some test might be devised and applied to the patient prior to the operation which would enable one to predict whether or not the venopressor mechanism of the patient is more susceptible than the average? If the patient was known to be susceptible, the clinician would be on his guard. If some simple test of the venopressor mechanism might be devised, it would be of great value.

DR. YANDELL HENDERSON, New Haven, Conn.: The general physical condition of a patient is expressed in the tonus of his muscles. If his condition is good and tonus is high, he can rise from a recumbent to a standing position suddenly with no considerable fall of arterial pressure. If his condition is poor and tonus low, the venous return is diminished, the heart action is thereby weakened, arterial pressure falls, and fainting may result. Venous congestion in heart disease may be due in part at least to the effect on internal respiration of an insufficient oxygen supply to the tissues because of a slow circulation. If this condition induces an abnormal tonus, an abnormally high venous pressure would result. This idea is as yet largely hypothetical; but in cases of nephritis with heart disease I have seen increased breathing with normal venous pressure on one day and a day or two later normal breathing with abnormally high venous pressure. Further work on this problem is needed. High external temperature, as in a Turkish bath, certainly does not raise venous pressure. It merely causes a relaxation of the cutaneous blood vessels and particularly of the veins. The skin is the one organ that is not affected by muscle tonus. It lies outside the muscles and thus outside the venopressor mechanism. Muscle tonus is closely associated with respiration. Dr. Garrey has recently shown that with every inspiration the tonus rises and with expiration it falls. With increased respiration under exercise, the tonus of the entire musculature of the body increases and the return of blood to the heart is accelerated. As Dr. Wiggers says truly, none of the present methods of measuring the circulation are exact. But their general teaching is clear. The control of the venous return is the factor that chiefly determines the efficiency of the heart action and the volume of the circulation. Before long, I believe, there will be sufficiently exact methods to make clinically valuable measurements of the circulation. Dr. Eyster's statement that he has developed a method of measuring the stroke of the heart by means of the x-rays is of great importance. It will be a race between Dr. Eyster with that method and Dr. Starr with the ethyl iodide method. I hope that in this race both win. I question whether it is necessary, or at least significant, to have strictly basal conditions for measurement of the circulation. What one wants to know is the volume of blood pumped under the ordinary conditions of life, and not merely in bed without breakfast. Dr. Starr is, however, correct in insisting on strictly basal conditions, at least for all investigative work.

VENOUS PRESSURE *

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Recent work on the part of a number of observers has thoroughly established the importance of a knowledge of venous pressure in certain clinical states and has extended and amplified its significance in the dynamics of the failing heart. The main conclusions from these observations [1] may be briefly stated as follows:

1. The venous pressure measured in a peripheral vein placed at the level of the right auricle, with the subject in a recumbent or semirecumbent position at body rest, does not exceed 110 mm. of water unless the heart is incompetent and is failing to meet fully the demands for circulatory maintenance. This appears to be true in all clinical states other than cardiac failure, the only exceptions being some localized obstruction to venous return.

2. Venous pressure in cardiac incompetence varies from the upper normal level to 300 mm. of water or

* From the University of Wisconsin Medical School.

* Read before the Section on Pathology and Physiology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Eyster, J. A. E., and Middleton, W. S.: Clinical Studies on Venous Pressure, Arch. Int. Med. **34**: 228 (Aug.) 1924. Eyster, J. A. E.: Venous Pressure and Its Clinical Applications, Physiol. Rev. **6**: 281 (April) 1926. Clinical Aspects of Venous Pressure, New York, Macmillan Company, 1929.

more. The extent of the failure is roughly proportional to the rise, and the clinical progress of the patient and the prognosis of the condition are in large part revealed by the trend of venous pressure.

3. Venous pressure is clinically an index of cardiac function and reveals cardiac incompetence independently of the cause of the failure. It is thus of equal importance in primary failure due to cardiac disease or to the secondary failures encountered in pneumonia [2] and in other conditions leading to toxemia of the muscle or to cardiac overload.

4. In many cases a change in venous pressure precedes other signs of clinical change, and frequent observation of venous pressure in cardiac incompetence is of assistance in the rational therapy of this condition. Especially important in this connection is the value of venous pressure as one of the indications for venesection and the index that it gives as to the effectiveness of this therapeutic procedure.[3]

5. The clinical significance of venous pressure thus appears to be confined to a single but important condition; namely, impending or present cardiac incompetence. Its usefulness is thus limited but of exceptional importance in its restricted field.

Experimental and clinical studies of venous pressure have also enlarged and clarified our conception of the mechanics of the normal heart and its change in cardiac failure. In the normal individual under normal activity the factors controlling the peripheral systemic circulation—the vasomotor nerves, the effect of chemical agencies on vascular tonus, and the mechanical influence of skeletal muscle contraction—may greatly alter the amount and pressure of the venous blood returning to the right auricle. This in turn determines the energy released by the contracting heart and the amount of blood it forces from the venous to the arterial side of the circulation. The normal heart is thus a self regulated pump which, through a property of its muscle, releases energy in proportion to the demand made on it. Because of this property it tends to prevent undue accumulation of blood within the venous system and to maintain venous pressure, except for transitory changes, at an approximately constant level, even in the presence of wide variations in peripheral vascular flow.[4] The normal heart is thus characterized by its ability to increase, within wide limits, its functional capacity with increasing loads. The upper range of venous pressure within which the heart is able to respond by increased work may be defined as the cardiac reserve.[5] There is evidence, both from experiments on laboratory animals and from observations on man, that this range in the normal heart is never exceeded, except under extreme laboratory conditions. The effect of damage to the heart muscle, resulting from toxemia or from malnutrition with degenerative changes, is to narrow this limit of response, to decrease the cardiac reserve and to bring its upper limit to the point at which there is failure to respond effectively to the existing venous load. Cardiac incompetence then appears and continues until, by the institution of physical rest, venesection and procedures in general which tend to lower venous pressure or to reduce the volume of blood in the venous system, or by other efforts directed toward an improvement of cardiac response by digitalization or similar therapy, the upper range of response of the cardiac muscle is carried beyond the existing venous pressure. The heart now regains its ability to move the returning venous blood adequately, and competence is regained. Cardiac incompetence may thus be described as that condition in which the venous pressure exceeds the range within which the heart is capable of responding by increased work to increased venous load. There is abundant evidence to prove that it occurs primarily as the result of a narrowing of the range of response, because of injury to the heart muscle. In valvular heart disease this injury appears to be the degenerative changes that tend to appear early in the hypertrophic heart muscle. Hypertrophy increases temporarily the range of response but leads, on the other hand, to the early onset of malnutrition and degeneration.[6]

Recent work, largely of an experimental nature, has also tended to emphasize the relation of venous pressure to the production of heart muscle dilatation and hypertrophy, conditions invariably found associated with valvular heart disease. In this I have reference not to the rises of venous pressure to which the normal heart is exposed under the exigencies of life but to the abnormal loads that occur when a valve becomes defective as a result of disease or experimental procedure, or to abnormal loads which may be produced in laboratory experiments. It has been shown that heart dilatation, followed by hypertrophy, occurs in the experimental animal as a result of experimental venous overload, even though this abnormal state lasts for a relatively short period. Such short periods of overload have been produced experimentally by constricting bands placed temporarily around the aorta of dogs [7] and by massive blood transfusions leading to an immediate increase of blood volume from 70 to 100 per cent.[8] The dilatation

Heart Weight-Body Weight Ratio in One Hundred and Ninety-Six Normal Dogs

Dog	Duration After Operation, Days	Time After Operation Before Exercise, Days	Duration of Exercise, Days	Average Time of Exercise a Day, Minutes	Heart Weight-Body Weight Ratio at Autopsy	Difference of Ratio from Normal of 0.00748, per Cent	Change in Roentgen Area in per Cent of Initial Area Before Exercise	Change in Roentgen Area in per Cent of Initial Area After Exercise
L	272	...	..	..	0.01013	+35.5	+ 4.0	.....
O	242	...	..	..	0.01080	+31.2	+ 0.9	.....
N	260	...	..	..	0.00866	+15.9	+ 2.2	.....
I	291	...	..	..	0.00718	— 3.9	+ 3.9	.....
J	283	...	..	..	0.00658	—11.9	— 6.2	.....
T	96	...	..	..	0.00795	+ 6.4	.....	.....
Average					0.00855	+12.2	+ 0.3	
P 3	41	21	14	23	0.00893	+19.6	+ 4.0	.....
P 4	20	13	7	7	0.00934	+25.0	— 3.4	.....
P 5	29	14	12	36	0.00868	+16.2	+ 7.0	.....
P 9	68	50	11	41	0.00781	+ 4.5	—13.5	— 4.0
Average					0.00869	+16.3	— 0.7	
P 1	215	36	56	47	0.00959	+28.3	— 1.8	+ 3.7
P 2	206	28	56	46	0.01204	+61.1	+ 2.2	+24.0
P 6	178	9	46	44	0.01097	+46.5	.....	+10.0
P 7	102	22	24	42	0.01224	+63.9	+10.2	+11.0
P 8	77	16	31	45	0.01097	+46.5	— 5.6	— 2.0
P 11	63	24	21	61	0.01061	+36.0	.....	— 0.7
P 12	50	24	22	60	0.01106	+48.0	.....	.....
H	320	268	40.	64	0.01163	+55.6	+ 6.7	+20.0
P	165	134	29	48	0.01113	+48.9	+16.2	+ 4.5
M	259	225	34	67	0.01103	+47.8	+ 6.4	+ 8.9
G	360	275	40	50	0.00942	+26.8	+ 9.0	+13.6
Average					0.010972	+46.59	+ 3.9	+ 8.46

2. Kastlin, G. J., and Maclachlan, W. W. G.: Venous Pressure in Pneumonia, Ann. Int. Med. **4**: 959 (Feb.) 1931.

3. Eyster, J. A. E., and Middleton, W. S.: Venous Pressure as a Guide to Venesection in Congestive Heart Failure, Am. J. M. Sc. **174**: 486 (Oct.) 1927.

4. Eyster, J. A. E., and Meek, W. J.: Studies on Venous Pressure, Am. J. Physiol. **95**: 294 (Nov.) 1930.

5. Eyster, J. A. E.: Venous Pressure in Cardiac Decompensation, J. A. M. A. **89**: 428 (Aug. 6) 1927.

6. Eppinger, H., and Knafl: Ueber Herzensufficienz, Ztschr. f. exper. Path. u. Therap. **5**: 77, 1909.

7. Eyster, J. A. E.: Cardiac Dilatation and Hypertrophy, Tr. A. Am. Physicians **42**: 15, 1927.

8. Eyster, J. A. E.: Experimental and Clinical Studies in Cardiac Hypertrophy, J. A. M. A. **91**: 1881 (Dec. 15) 1927.

thus produced is comparable to that resulting from an experimental valve injury [9] and results from an abnormal diastolic residuum of blood in the heart. The load is temporarily greater than can be moved, and dilatation with abnormal stretching of the muscle results. This leads to injury to the muscle, as is evident on microscopic examination. Hypertrophy of the muscle follows and occurs whether the initial derangement is permanent, as in destruction of a leaflet of the aortic valve, or is transitory, as previously described.

In my experience, the venous overload associated with extreme physical activity in man or the experimental animal does not lead to dilatation and hypertrophy, so long as the heart is normal. My associates and I have in progress now two series of experiments, designed to test the effect of the high venous loads encountered in extreme physical activity in animals in which the cardiac mechanism is impaired. The first series is concerned with the possible restraining influence of the pericardium in preventing, in the normal animal, the degree of dilatation sufficient to initiate hypertrophy.

As a preliminary to this study, we have determined the heart weight-body weight ratio in a series of 196 normal dogs. Eighty-six per cent of these fell within ± 20 per cent variation from the average ratio of 0.007478. The pericardium was removed under aseptic precautions from twenty-four normal dogs (table). Teleroentgenograms were made before the operation and at weekly intervals thereafter. The animals were finally killed and the heart weight-body weight ratio determined for comparison with the normal series. The first group of six animals were kept in the kennels for periods of from 96 to 283 days. At the end the roentgen determinations did not show any evidence of cardiac dilatation or hypertrophy. The heart weight ratio appeared high in two, while two were below the average normal, and the average for the group of a + 12.2 per cent variation was inconclusive as regards the occurrence of hypertrophy. A second group of three animals (not shown in the table) were submitted to mild exercise on a tread mill for sixty days, the exercise consisting of a 2 mile run over a period of thirty minutes on a grade inclined upward at an angle of 15 degrees. This group likewise did not show any conclusive evidence of cardiac dilatation or hypertrophy. A third group was submitted to what may be considered as moderate exercise over a relatively short period. These animals swam for from seven to forty-one minutes a day in a large swimming tank over a period of from seven to fourteen days. The evidence for the development of cardiac dilatation and hypertrophy was again inconclusive. Finally, a fourth group of eleven dogs was submitted to severe exercise, swimming continually for from forty-two to sixty-one minutes daily over a period of from twenty-one to fifty-six days. The animals were kept in activity until there was evidence of physical exhaustion. Five of the eleven showed roentgen evidence of dilatation, and the heart weight-body weight ratios in all were well above the normal series. The average ratio for the group was 46.59 per cent above the average normal ratio. This we regard as conclusive evidence of cardiac dilatation and hypertrophy in these animals. It would thus appear that one of the functions at least of the pericardium is to restrain the tendency to dilatation with subsequent hypertrophy that would tend to appear with the high venous load associated with severe muscular exertion. That the restraining influence of the pericardium becomes more pronounced as dilatation of the heart reaches a considerable degree has been observed by other workers.[10]

The second series of experiments is concerned with the extent of dilatation and hypertrophy in two groups of dogs with experimental aortic regurgitation, one subjected to severe exercise, the other kept as controls in the kennels. Although this series is not as yet completed, it would appear that in the group subjected to exercise a definitely greater degree of dilatation and hypertrophy has developed than in the nonexercised group. The occurrence of severe physical exertion thus appears to increase the extent of dilatation and hypertrophy that develops subsequent to an experimental aortic lesion.

Whether or not a high venous pressure leads to cardiac muscle injury with dilatation and subsequent hypertrophy would thus seem to depend on two factors: the extent of the venous overload and the protective influence of the pericardium. With the pericardium intact, the restraining influence is sufficient to prevent injury except when the normal load is greatly exceeded as a result of valve injury, orifice constriction or massive increase of blood volume. On the other hand, with the restraining influence of the pericardium absent, damage may result from the high venous pressure associated with severe muscular exertion. With the process of dilatation and hypertrophy once initiated, subsequent exposure to high venous pressures appears to lead to greater changes than would otherwise appear.

The importance of the protection of the heart, already the seat of myocardial injury and hypertrophy, from high venous pressures would thus appear obvious, not alone from the general rule that a diseased organ is injured by overwork, but from the experimental observations previously quoted that suggest a rational explanation as to the mechanism by which this further damage occurs.

9. Eyster, J. A. E.; Meek, W. J., and Hodges, F. J.: Cardiac Changes Subsequent to Experimental Aortic Lesions, Arch. Int. Med. **39**: 536 (April) 1927.

10. Wilson, J. A., and Meek, W. J.: The Effect of the Pericardium on Cardiac Distention as Determined by the X-Ray, Am. J. Physiol. **82**: 34 (Sept.) 1927.

CIRCULATION IN PYREXIA *

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The cardiovascular changes in experimental pyrexia from exposure to heat resemble in many respects those seen during fever, but in other respects they differ considerably.

The pulse rate varies in experimental pyrexia according to the body temperature, in a manner similar to that in fever. In chart 1 the changes [1] in pulse rate with rise of body temperature produced by lying in a hot bath are compared with those [2] induced by sitting in a hot room and with the commonly accepted change in pulse rate in fever (increase of from eight to ten beats a minute for each degree above 98.6 F.). It will be observed that the changes are of similar order, though in both experimental conditions the pulse rate tended to be faster at any given temperature level when the temperature was rising than when it was falling, and, to some extent at any rate, irregularities depended on variations in the rate of change of temperature. These

* Read before the Section on Pathology and Physiology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Bazett, H. C.: Am. J. Physiol. **70**: 412 (Oct.) 1924.
2. Adolph, E. F., and Fulton, W. B.: Am. J. Physiol. **67**: 573, 1924.

changes in pulse rate appear to be mainly dependent on physicochemical alterations, since they are not dependent on the presence of either the vagus or the splanchnic nerves.[3] Figures given for the effect of temperature on the excised dog heart [4] are shown in chart 2 for comparison with the acceleration of the pulse in the anesthetised dog.[5] While in the intact animal, as in man, reflex changes appear to cause temporary irregularities, the general change in pulse rate is similar to that in the excised heart. One must therefore assume that, in pyrexia, adjustments in the circulation are achieved without any great alteration in reflex effects on the heart rate. Adolph considers the change in the pulse rate to be more closely related to surface than to deep temperature, which would almost of necessity imply a reflex factor; but it is by no means certain that the rectal temperature affords a reliable guide to the cardiac temperature, during rapid alterations in body temperature. Reflexes, however, play at any rate a minor rôle; the pulse rates observed by Adolph when the subject was sitting were higher than those observed when the subject was lying down, and the latter data check better with those observed in hot baths and in fever. The rapid increase in pulse rate in experimental pyrexia induced by standing was emphasized by Hill and Flack.[6] When commencing circulatory failure is induced by exposure to heat, the pulse rate may show a sudden acceleration; and in this also a reflex factor is probably involved. The increase in pulse rate above the normal fever level, which may accompany infections with symptoms of toxemia, may also have a reflex cause and belong similarly to conditions near the breaking point; but no adequate method of analysis has been devised.

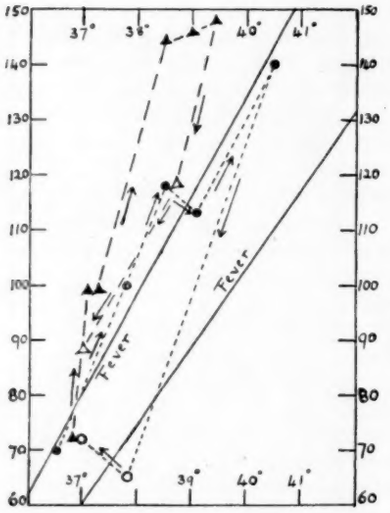

Chart 1.—Pulse rate changes observed by Adolph in a hot room and by Bazett in a hot bath, compared with pulse rate changes commonly assigned to fever. The abscissas indicate mouth temperatures, and the ordinates pulse rates in beats per minute. Fever limits are indicated by heavy lines; Adolph's data by solid triangles during heating, open triangles during cooling, and Bazett's data similarly by solid and open circles.

The circulation rate is increased in experimental pyrexia, probably also in fever. An increase of from 20 to 30 per cent has been demonstrated [7] in animals in hot baths. In one experiment a rise of rectal temperature of 5 degrees centigrade increased the pulse rate from 165 to 252 (53 per cent) and the minute volume by 30 per cent only. Grollman [8] has shown a similar increase in minute volume (30 per cent) in man on exposure to mildly warm air ("humidity maintained low to avoid discomfort"). The pulse rates reported did not exceed 85 per minute, an increase of 45 per cent, and the increase in body temperature was described as "slight." Increases in minute volume accompany experimental pyrexia but are probably smaller than the changes in pulse rate; it is uncertain how far the results may be applied to fever.

The blood pressure level is determined by the relation of heart output per minute to the average resistance to flow in the periphery, but, in the latter factor at least, the conditions in experimental pyrexia and fever are probably not comparable. In experimental exposure to heat, flow through the superficial capillaries, venules and veins appears rapid, and these vessels are much dilated; Uyeno [7] found in the cat that the local increase in circulation of a skin area on exposure to heat might amount to 600 per cent, but even so he considered that the increased circulation through the skin was insufficient to account for the whole of the increased heart output. While, on exposure to heat, there is therefore evidence of diminished peripheral resistance in the skin area, in fever, particularly during the stage when the temperature is rising, the skin appears pale, the veins are constricted, and vasoconstriction in this area is indicated by a temporary failure to increase heat loss in spite of the rise of body temperature.[9] Evidence has also been advanced by von Euler [10] that the blood of fever patients contains some substance capable of inducing constriction of skin vessels; he considers that this substance shows many of the properties of epinephrine.

The metabolism is increased in pyrexia, whether of experimental or of infectious origin, and this increased metabolism is likely to be associated also with some vascular dilatation in muscle areas. In the early stages of fever, during the rise of temperature this increase in metabolism may be considerable,[9] and consequently a considerable vasodilatation in the muscle area may be assumed. This may balance vasoconstriction in the skin and give a decrease in the average peripheral resistance. In this case artificial pyrexia and fever may both be accompanied by lowered peripheral resistance and differ only in the area in which the resistance is mainly lowered. In fever the area mainly involved may even differ according to the stage of fever.

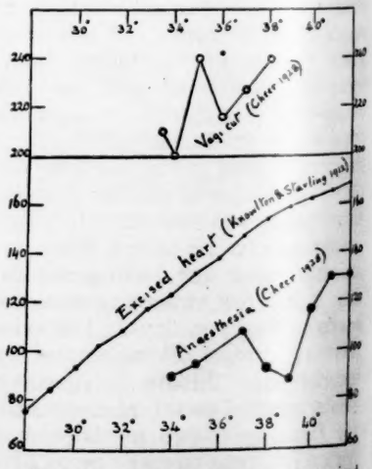

Chart 2.—Effect of temperature on excised heart of dog, compared with relationship of pulse rate to rectal temperature in anesthetized animal. The abscissas indicate temperatures in degrees centigrade and the ordinates pulse rate per minute.

On exposure to mild warmth there is usually a fall of both systolic and diastolic pressures, though there is some tendency for this fall to be less pronounced at the higher temperatures. This is well illustrated in Grollman's data and must imply lowered peripheral resistance, since the cardiac output was demonstrably increased. At somewhat higher effective temperatures, Sayers and Harrington [11] noted a fall of both systolic

3. Kuno, Y.: Arch. f. d. ges. Physiol. **158**: 555, 1914. Kirsch: Ibid. **198**: 105, 1923.
4. Knowlton and Starling: J. Physiol. **44**: 217, 1912.
5. Cheer, S. N.: Am. J. Physiol. **84**: 591 (April) 1928.
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and diastolic pressure much greater than that reported by Grollman. At still higher temperatures, Adolph [2] noted consistently a rise in systolic and fall in diastolic pressure. With hot baths I [1] observed consistently a fall in diastolic pressure, while the systolic fell in mildly warm baths, rose with hotter baths, and might fall again, even in quite hot baths, if symptoms of circulatory failure were observed. The balance between

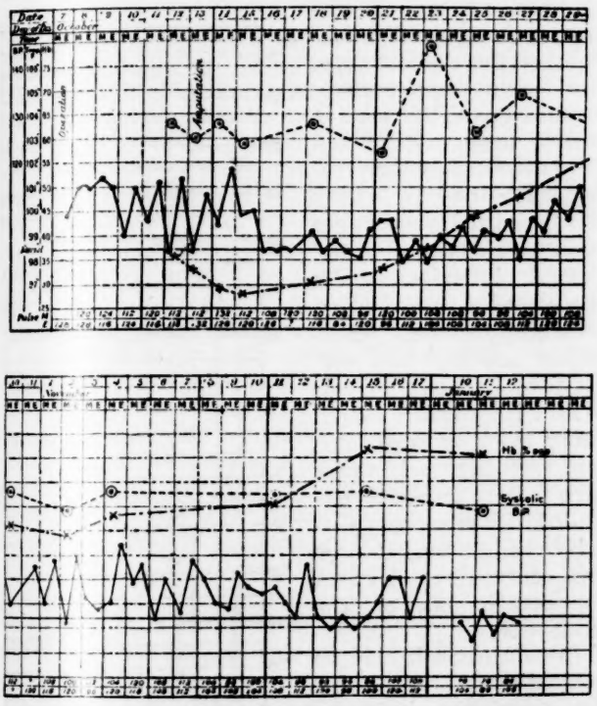

Chart 3.—Temperature, systolic blood pressure, and hemoglobin percentage in a case presenting a penetrating wound of the knee joint and amputation on the ninth day. Temperature records commence on the third day, and blood pressure records on the eighth day.

increased circulation rate and decreased peripheral resistance is variable, and the blood pressure levels may either be increased or decreased. A raised systolic pressure appears evidence of a somewhat severe test and often precedes symptoms of distress and circulatory failure; for in experimental pyrexia with profuse sweating, if water is not given, final circulatory failure gradually ensues and is associated with evidence of diminished blood volume and inadequate venous return. The symptoms resemble those following hemorrhage, and restlessness is a prominent feature. Restlessness appears physiologically a reflex method of improving venous return, and, whenever, it is a prominent symptom, attention should be directed to this factor.

In fever a fall in blood pressure is commonly described. Newburgh and Lawrence [12] considered the fall as probably the simple result of the temperature change. In view of the different condition of the skin circulation, this generalization is unwarranted. The assumption that a low blood pressure usually accompanies fever seems to depend on a study of medical cases; in surgical cases, where conditions are perhaps somewhat simpler to visualize, the reverse is common. Thus in wounded patients on recovery from shock Robertson and Bock [13] described systolic blood pressures which often were maintained for days at from 130 to 150 mm. In many of their cases a streptococcal infection was identified. Somewhat earlier, Drummond and Taylor [14] considered that a rise in blood pressure accompanied infections with the gas gangrene bacillus and reported many systolic pressures above 130 mm. (one reaching 160 mm.) in cases that were later fatal. Hypertensive properties are also ascribed to staphylococcic and pyocyaneus toxins.[15] In view of the variety of bacteria that may be accompanied by hypertension in surgical conditions, it seems more probable that the differences lie in the position of the inflammatory change. As the result of a study of blood pressure changes for weeks or months in sixty-four surgical cases with extensive wounds (fifty-four cases with a compound fracture of the femur, a penetrating wound of the knee, or both, and often complicated by other wounds) I [16] concluded in 1918 that the local vasodilatation of inflammation is commonly reinforced by a readjustment of the circulation as a whole, adapted to force more blood through the damaged area and accompanied by a raised blood pressure and probably by an increased circulation rate. I see no reason to change this opinion. At any rate in the type of case described a rise of blood pressure is the rule while fever lasts, provided the subject's general condition is adequate to achieve it, and the association of a so-called normal pressure with an infection of this type implies the presence of some toxic or other factor that interferes with the development of the pressor change. As the clinical condition of such a subject improves, the systolic blood pressure rises from an apparent "normal" level to the real normal high pressure of inflammation, and thereafter it usually remains high as long as fever is continued. A few examples are reproduced to illustrate these points. The relationship of blood pressure changes to fever in one such case is shown in chart 3, the capacity to develop high blood pressure having been recovered eight or nine days after an amputation for a compound fracture of the femur. A more detailed analysis of the blood pressure changes is given in chart 4. (Mean pressure is arbitrarily assumed as the midpoint between systolic and diastolic pressures.) In other cases with less toxic symptoms systolic pressures as high as 160 mm. might accompany fever of 39 C. (102 F.) from the beginning.

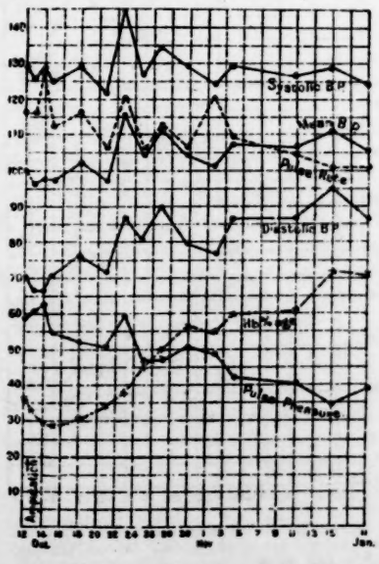

Chart 4.—More detailed analysis of blood pressures in case illustrated in figure 3. The abscissas denote the time in days.

From a study of such cases it seems certain that the absence of a pressor response to local infection may depend on toxemia interfering with either the activity

12. Newburgh, L. H., and Lawrence, C. H.: Effect of Heat on Blood Pressure, Arch. Int. Med. **13**: 287 (Feb.) 1914.
13. Robertson and Bock: Brit. M. Research Committee Spec. Rept. **25**: 213, 1918.
14. Drummond and Taylor: Brit. M. Research Committee Spec. Rep. **25**: 199, 1918.
15. Norris, G. W.; Bazett, H. C., and McMillan, T. M.: Blood Pressure and Its Clinical Applications, Philadelphia, Lea & Febiger **8**: 175, 1914.
16. Bazett, H. C.: Brit. M. Research Committee Spec. Rep. **25**: 181, 1918.

of the vasomotor center or the force of the heart, even though the study of experimental pneumonia by Newburgh and Porter [17] offers some evidence that the latter factor is uncommon. An adequate analysis of the relationship of pulse pressure and pulse rate changes to mean blood pressure should allow a differentiation between these factors, and in 1919 I [18] attempted a mathematical analysis of this sort. Unfortunately this attempt was based on poor mathematics, if possible worse physics, and on measurement clinical methods of which I believe to be inadequate, and showed a neglect (unavoidable through war conditions) of previous literature. I am glad to take this opportunity of retracting any arithmetic then advanced. Sometimes, however, it is possible to distinguish the factors in circulatory failure; an instance is shown in chart 5 in which circulatory failure was cardiac and was caused by pyopericarditis and bilateral empyema in a case of septic thrombitis with a penetrating wound of the hip joint; toxemic symptoms appeared minimal. This chart may be contrasted with chart 6, which shows the changes in a patient with multiple wounds (penetrating wound of knees and compound fracture of the superior maxilla); in this case toxemia was probably a considerable factor, and the relative importance of cardiac and vasomotor failure is hard to determine.

For toxic factors may sometimes apparently either directly or indirectly affect the heart. For instance, one patient with a compound fracture of the femur and with apparent extreme toxemia showed considerable venous engorgement and evident rise of venous pressure (although this was not measured), and both symptoms and signs indicated improvement immediately after amputation under nitrous oxide and oxygen (with morphine) anesthesia; at the same time, systolic and diastolic pressures were both increased. Forty-eight hours later, arterial pressures had again fallen and a high venous pressure had returned; irrigation of the wound (previously kept dry and at this time very foul) with surgical solution of chlorinated soda was immediately followed by an improvement in the pulse and disappearance of the venous engorgement. The arterial pressures were not measured for two days but then were definitely higher. The accompanying venous engorgement suggests that the heart was itself affected.

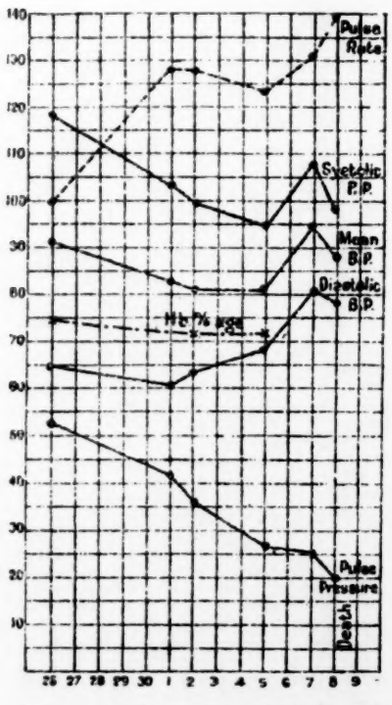

Chart 5.—Blood pressure changes observed in patient dying of cardiac failure (pyocarditis and so on).

In medical cases with general infection associated commonly with a fall in blood pressure, analysis on similar lines may be possible. Pressor reflex changes of the type described are unlikely to be associated with pulmonary infections, since the pulmonary circulation is by no means comparable in this respect with the systemic. But in abdominal infections a pressor response of the same type might be anticipated (and I have observed such a response in two patients with abdominal wounds which I have investigated somewhat inadequately), provided the area involved in the local vasodilatation was not too great. In general infections of the typhoid type, the local inflammatory dilatation might involve such a large vascular bed as to overshadow the pressor response in other areas, and the same might readily be true of many general infections. An absence of a rise of blood pressure in such cases should not therefore necessarily be ascribed to toxic interference with either heart or vasomotor center, though of course such factors cannot be excluded. Inflammatory vascular changes over a large area themselves levy a considerable tax on the circulation.

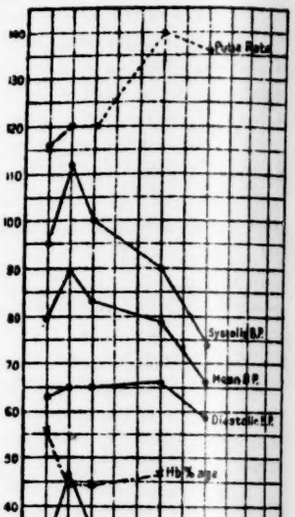

Chart 6.—Blood pressure changes observed in patient dying with pronounced toxic symptoms.

In conclusion it may be pointed out that studies of the circulation in fever both in animals and man have been inadequate, and the hope may be expressed that a more systematic study may be possible. For such studies the present methods of blood pressure measurement must be improved, and a greater capacity of analysis must be developed, since the respiratory methods of measuring circulation rate are unlikely to be adaptable to these cases. By improved technic in measuring blood pressure, by a study of the character of the pulse wave, by consideration of the complexities introduced by end and lateral pressure heads, and by careful standardization of any calculations through comparison with circulation rate measurements of the respiratory type, it may ultimately prove possible to unravel the complexities of the circulatory changes in such patients by the use of relatively simple technical methods.

University of Pennsylvania School of Medicine.

[EDITORIAL NOTE.—This paper, together with the papers of Drs. Henderson and Eyster, which precede it, and those of Drs. Wiggers, Katz and Sutton, to appear next week, constitute a symposium on the heart and the circulation. The remainder of the discussion will follow the papers to be published next week.]

17. Newburgh and Porter: J. Exper. Med. **22**: 123, 1915.
18. Bazett, H. C.: Proc. Roy. Soc. London **90**: 415, 1919.

The Goal of Science.—The ultimate goal of pure science is the complete unification of all the laws of nature into a single principle which shall explain the phenomena both of living and of nonliving matter. The goal of applied science is to utilize the knowledge thus gained in ways that may benefit the human race.—Graves, W. P.: The Unification of Science and Its Relation to the Control of Life, *Am. J. Obst. & Gynec.* **22**:341 (Sept.) 1931.

COMPARISON OF PREGNANCY TESTS*

MILO R. WHITE, M.D.
AND
ALVIN O. SEVERANCE, M.D.
DETROIT

A laboratory procedure for the diagnosis of pregnancy has been a subject of interest to obstetricians for many years. The early work in this field, which seemed most promising at first, has been shown to have little or no practical value. Since then, advances in physiology and endocrinology have added much to our knowledge of the function of the ductless glands and of their physiologic changes during pregnancy. It is on this fundamental work that the pregnancy tests of Aschheim and Zondek, of Brouha and of Friedman depend. In this study these three reactions, as well as the empiric reactions of Bercovitz and of Manoilov, have been performed, so far as possible, on each individual in a series of pregnant and nonpregnant patients. It is our purpose to ascertain their relative values as diagnostic procedures in gynecologic as well as obstetric cases.

A large amount of experimental work has been done to demonstrate the relationship between the anterior lobe of the hypophysis and the genital tract. In 1904, Launois and Mulon [1] described the hypertrophy of this gland during pregnancy. Evans [2] in his studies on the hypophysis, described the luteinization of unruptured follicles in the ovaries of immature mice which had been injected with bovine hypophyses. Smith [3] was able to hasten sexual maturity in immature rats by means of anterior lobe transplants. Smith and Engle [4] demonstrated that pituitary transplants in spayed immature rats did not cause the vagina to open, and the uterus showed only castration atrophy; whereas the vagina did open, and the development of the genital tract was stimulated if the ovaries had not been removed. These investigators, as well as Steinach and Kun [5] and others, have demonstrated that pituitary transplants stimulated the growth of the male genital tract. The stimulation was most apparent in the accessory organs, although the testes did show some increase in size. In their hypophysectomized animals there was a cessation of follicular growth in the ovaries. When these animals were treated with anterior lobe transplants, the growth of the follicles was stimulated. Aschheim and Zondek [6] concluded from their experimental work that the ovarian function in the immature animal could be stimulated only by the anterior lobe of the hypophysis. From forty to sixty hours after the implantation of the anterior lobe, they found enlarged follicles in the ovaries, and a proestrual stage in the vaginal smear. One hundred hours after the implantation, the animal was at the height of rut and the ovaries contained vascularized corpora lutea.

ASCHHEIM-ZONDEK TEST

Aschheim and Zondek injected immature white mice with the urine of a pregnant woman and thereby produced a reaction which simulated that produced by anterior lobe transplants. Since the urine of nonpregnant women failed to produce these changes in the ovaries of the test animals, these investigators have utilized the reaction as a test for pregnancy.

Their technic, which is described in the literature, will not be repeated. The reaction is considered to be positive for pregnancy if an ovary of one of the animals is found to contain a hemorrhagic follicle or a corpus luteum. If these structures cannot be demonstrated macroscopically, the ovaries are examined microscopically. The reaction is not interpreted as being positive for pregnancy if only enlarged follicles are found.

Aschheim [7] reported an error of 1.6 per cent in a series of 258 control urines on which the Aschheim-Zondek test had been done. In a series of 197 reactions with urines from pregnant women, there was an error of 2 per cent. Robertson,[8] in reviewing 2,368 cases reported by thirteen investigators, found an average error of 1.47 per cent. Mazer and Hoffman [9] reported 16 positive reactions in a series of 164 observations on nonpregnant women. Thirteen of the false positive reactions were associated with endocrine disturbance. Mack [10] has reported 500 Aschheim-Zondek reactions, of which 98 per cent were correct. In this series there was only one false positive reaction.

BROUHA TEST

Brouha and his associates [11] found that only 60 per cent of positive Aschheim-Zondek reactions could be recognized by macroscopic methods alone. In order to obviate the necessity of microscopic examination, they used immature males, in which the changes in the genital tract are of macroscopic proportions.

According to their technic, four male mice, weighing from 8 to 15 Gm. each, are injected with from 0.1 to 0.4 cc. of morning urine daily for from eight to ten days. They are killed twenty-four hours following the last injection. The reaction is positive for pregnancy if the seminal vesicles are abnormally enlarged, swollen, and distended with a whitish fluid.

Brouha reported a series of 145 cases in which this reaction had been observed. Among these women 92 were pregnant, in all of whom the reaction was positive. In thirty nonpregnant women the results were uniformly negative. In nineteen instances in which the diagnosis of pregnancy was questionable, all the reactions agreed with the subsequent clinical history.

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* From the Henry Ford Hospital.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

* This study was made possible through the cooperation of the Department of Gynecology and Obstetrics and the Department of Laboratories of the Henry Ford Hospital. Dr. J. P. Pratt and Dr. F. H. Hartman assisted in the preparation of this paper.

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FRIEDMAN TEST

Friedman [12] has modified the Aschheim-Zondek test by injecting the urine intravenously in nongravid mature female rabbits. Four cubic centimeters of urine is injected three times daily for two days, and the ovaries are examined forty-eight hours after the first injection. The reaction is positive for pregnancy if hemorrhagic follicles or corpora lutea are present in the ovaries on macroscopic examination. If there are only clear unruptured follicles, the reaction is negative.

Friedman and Lapham reported their observations in ninety-two controlled cases, in all of which the reaction agreed with the subsequent clinical history. Reinhart and Scott [13] have reported 150 reactions, all of which checked with the clinical history, with the exception of two cases. However, these two cases showed reactions subsequently which corresponded with the clinical observations. Their technic was to inject from 5 to 12 cc. intravenously and note the reaction twenty-four hours later. In our own observations we have injected 10 cc. intravenously and examined the ovaries forty-eight hours later. Schneider [14] reported a series of 100 observations on a group of patients in which there were 25 pregnant individuals, 25 nonpregnant individuals, and 50 in whom pregnancy was suspected. With the exception of two cases, the reaction was in agreement with the subsequent findings. Repeated tests on these two cases checked with the clinical course.

PUPILLARY REACTION OF BERCOVITZ

Bercovitz [15] described his observations on the reaction of the pupil when the individual's blood serum was instilled in the conjunctival sac. There was first noticed a sudden spasm of accommodation; following this, no change in the size of the pupil was noted in a series of seventy-two normally menstruating women. However, in a series of seventy-five observations on sixty-eight pregnant women, 80 per cent showed a dilatation or contraction following the initial pupillary spasm. If this subsequent dilatation or contraction of the pupil occurred, the reaction was considered positive for pregnancy. However, the author has not advocated the use of the reaction as a means of differential diagnosis.

MANOILOV REACTION

Manoilov [16] has recently described a serum reaction for pregnancy, which, in his series of 696 observations, was correct in 94 per cent of the cases. It is suggested that the reaction may be due to an increased p_H of the blood serum during pregnancy, or that colloidal changes occurring in pregnancy produce an increase in the amount of a specific substance that may play a rôle in the reaction. The test requires 0.3 cc. of blood serum, to which are added 1 cc. of 2 per cent aqueous solution of theobromine sodiosalicylate and one drop of alcoholic solution of nile blue. If the serum is from a pregnant woman, Manoilov states that the blue color becomes yellow or reddish yellow and that the reading may be made at the end of one hour. In the absence of pregnancy, no color change is noted. No statement is made as to the time in pregnancy at which the tests were carried out. While these serums were obtained from different sources, no precautions were taken to prevent a change in the p_H of the blood.

Fretwurst and Otto,[17] in describing their experiences with Manoilov's reaction, found only one positive reaction in forty-one observations during the first trimester of pregnancy; in the second trimester, only 35 per cent were positive, whereas, in the third trimester they were positive in 61 per cent. These workers discredit Manoilov's theory that the reaction is due to an increase in the p_H of the blood serum of pregnancy. They attempted to eliminate any change in the p_H by taking the blood under paraffin but found that the color reaction did not differ from that in serum which had been exposed to the air. They also point out that alkaline theobromine sodiosalicylate solution should produce a positive reaction if used in excess. However, an excess of this reagent does not decolorize the mixture. In view of this, Fretwurst and Otto do not believe that the small variations in p_H during pregnancy can play a rôle in the reaction.

COMMENT

It has been our purpose to perform all the foregoing reactions on each specimen of urine, so far as possible, and to compare the results. The pupillary reaction of Bercovitz was observed seventy-three times; in forty-two cases the results were incorrect, or an error of 57 per cent. There were seventy-eight observations of the Manoilov test, which were incorrect in forty-five, or 57 per cent of the cases. These tests were carried out according to the technic described by the respective authors. There was a series of 191 Aschheim-Zondek reactions, of which 20, or 10 per cent, were negative for pregnancy. The Brouha reaction on 106 of these specimens was incorrect ten times, or in 9.4 per cent of the cases. The Friedman test was negative four times in a total of forty observations.

TABLE 1.—*Empirical Reactions for Pregnancy*

	Manoilov Reaction			Pupillary Reaction		
	Total	Positive	Negative	Total	Positive	Negative
Pregnant	65	21	44	58	19	29
Nongravid	13	1	12	15	3	12
Total	78			73		
Errors	45 (57%)			42 (57%)		

In ninety-three early normal pregnancies, the Aschheim-Zondek test was positive ninety-two times and negative once. The specimen giving the negative reaction was positive with the Brouha test and negative with the Friedman reaction. In sixty of these normal pregnancies the Brouha reactions were uniformly positive. In this series there were fourteen Friedman reactions. These were all positive, with the exception of one, which was carried on the thirty-second day after the last menstrual period.

There were eleven ectopic pregnancies which were demonstrated at operation. The Aschheim-Zondek reaction was positive five times and negative six times. The average duration of the pregnancies was approximately the same in the two groups. The Brouha

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13. Reinhart, H. L., and Scott, Ernest: The Hormone Test for Pregnancy, Am. J. Clin. Path. **1:** 113-126 (March) 1931; A Modification of the Aschheim-Zondek Test for Pregnancy, J. A. M. A. **96:** 1565-1567 (May 9) 1931.

14. Schneider, P. F.: A Hormone Test for the Diagnosis of Early Pregnancy: Clinical Application in One Hundred Cases, Surg. Gynec. Obst. **52:** 56-60 (Jan.) 1931.

15. Bercovitz, Zacharias: Studies on Pupillary Reactions of Pregnant and Nonpregnant Women and Their Practical Application to Diagnosis of Pregnancy as Simple Procedure, Am. J. Obst. & Gynec. **19:** 767-778 (June) 1930; A Study of the Pupillary Reactions as a Diagnostic Aid in Pregnancy, Tr. Sect. Obst., Gynec. & Abdom. Surg., A. M. A., 1930, pp. 77-86.

16. Manoilov, E.: Eine einfache Serumreaktion zur Schwangerschaftsbestimmung, Arch. f. Gynäk. **140:** 138-140, 1930.

17. Fretwurst, F., and Otto, K.: Die Manoiloffsche Schwangerschaftsreaktion, Arch. f. Gynäk. **143:** 459-464, 1930.

reaction, which was observed ten times in this group of cases, was uniformly positive. Four Friedman reactions were positive in two instances and negative in two. One of the cases giving a negative Friedman reaction gave a negative Aschheim-Zondek and a positive Brouha reaction.

In a series of eighteen incomplete abortions, there were ten positive and eight negative Aschheim-Zondek reactions. The Brouha test was done in only four of these eight cases, the reaction being positive in each instance. In this series there were nine Brouha tests, all of which gave positive results. There were four

TABLE 2.—*Hormone Tests for Pregnancy*

Diagnoses	Aschheim-Zondek			Brouha			Friedman		
	Total	Positive	Negative	Total	Positive	Negative	Total	Positive	Negative
Normal pregnancies	93	92	1	60	60	..	14	13	1
Ectopic pregnancies	11	5	6	10	10	..	4	2	2
Incomplete abortions	18	10	8	9	9	..	4	3	1
Nongravid controls	69	5	64	27	10	17	18	..	18
Total number of observations	191			106			40		
Number of reactions not supporting final diagnosis	20 (10%)			10 (9.4%)			4 (10%)		

Friedman tests, of which one gave a negative reaction and three positive reactions. The Aschheim-Zondek and the Brouha tests both gave positive reactions in the case which gave a negative Friedman reaction.

In a series of sixty-nine observations on nongravid patients there were five false positive Aschheim-Zondek reactions; in four of these five cases the Brouha reaction was also positive. The uterine curettings in two of these patients showed hypertrophied endometrium. The third patient complained of menstrual irregularity. In twenty-seven Brouha reactions of this series there were ten false positive results. Four of these ten false positive reactions have previously been accounted for. Of the remaining six cases, two showed hypertrophy of the endometrium; two were menopausal; one presented pelvic inflammatory disease, and one was in the premenstrual stage. There were eighteen Friedman reactions, all of which were negative.

If one considers only the nonpregnant controls and the normal pregnancies, the Aschheim-Zondek reaction was incorrect only 6 times in a series of 162 observations, or an error of 3.7 per cent. This figure is substantially the same as that reported by Aschheim and Zondek. Among thirty-two Friedman reactions on the same group of patients there is only one error, or an error of 3.1 per cent. In these two clinical groups there were eighty-seven Brouha tests with an error of 11 per cent due to false positive reactions.

The ectopic pregnancies and incomplete abortions gave negative Aschheim-Zondek readings fourteen times in a series of twenty-nine cases. In eight of these the Friedman reaction was negative three times. However, it is to be noted that the Brouha test was uniformly positive. This might indicate that the Brouha test is more accurate than that of Aschheim and Zondek, or of Friedman, if it were not for the large number of false positive Brouha reactions among nongravid controls.

The disadvantages of the Aschheim-Zondek reaction are that immature mice are required, and the ovaries must frequently be examined microscopically. These objections are obviated with the Brouha test, in which the animal may be nearly mature, and the reaction is read macroscopically. However, the time required for the test is a distinct disadvantage.

The advantages of the Friedman reaction are that only one test animal is required, and the result may be determined after from twenty-four to forty-eight hours by macroscopic examination.

SUMMARY

1. In 191 Aschheim-Zondek reactions there were 20 instances in which the result did not check with the final diagnosis. There were five false positive reactions among sixty-nine controls which were not pregnant. There were twenty-nine observations in a group of ectopic pregnancies and incomplete abortions, fourteen of which were negative. In only one case of pregnancy was the Aschheim-Zondek reaction negative.

2. The Brouha reaction was uniformly positive in a group consisting of sixty normal pregnancies, ten ectopic pregnancies and nine incomplete abortions. However, there were ten false positive reactions in a series of twenty-seven nongravid women. Four of these showed hypertrophy of the endometrium; three complained of menstrual irregularity, and one had tuberculous salpingitis.

3. The Friedman test was observed in forty cases. In the groups of normal pregnancies and nongravid controls there were thirty-two observations, all of which were correct with one exception. In this case, which proved to be a normal pregnancy, the reaction was carried out on the thirty-second day after the last menstrual period. There were four ectopic pregnancies, which gave two positive and two negative reactions. There were four incomplete abortions, three of which gave positive reactions.

4. The tests of Aschheim and Zondek and of Brouha gave false positive reactions which probably depended on some endocrine disturbance. In such cases a consideration of the history usually prevents confusion.

5. In the groups of ectopic pregnancies and incomplete abortions, the Aschheim-Zondek reaction was of value as a diagnostic procedure in 51 per cent of the cases, whereas the Friedman reaction was of diagnostic value in 62 per cent of the cases. The Brouha reaction was uniformly correct; however, this reaction does not lend itself as a practical diagnostic aid in cases of this type because of the time required for carrying out the test.

6. In cases of suspected normal pregnancy the Brouha reaction possesses distinct advantages over the Aschheim-Zondek reaction in that the results are determined macroscopically, and nearly mature test animals may be used.

7. The advantages of the Friedman reaction are that only one test animal is required and that the reading may be made macroscopically at the end of from twenty-four to forty-eight hours. In view of our own experience and that of others who have reported a total of 300 observations, we believe that the Friedman test is a dependable biologic reaction and a suitable laboratory procedure.

8. The tests of Aschheim and Zondek, of Brouha and of Friedman depend on a quantitative change in the amount of active principle that is excreted in the urine during pregnancy. This active principle is presumably anterior lobe hormone. A substance specific to pregnancy has not been demonstrated.

9. In our experience, the serum test of Manoilov and the pupillary reaction of Bercovitz have been of little value as diagnostic aids.

ABSTRACT OF DISCUSSION

DR. MAURICE H. FRIEDMAN, Philadelphia: I shall concern myself chiefly with those tests in which the rabbit is used. The rabbits one gets from different sections of the country may vary markedly in their response to any treatment. I may quote, for example, my own experience here in contrast to that of investigators at Johns Hopkins. I am obliged to buy rabbits indiscriminately on the market. Those rabbits will not give uniform results, whether they are mature or immature, with one single intravenous injection of urine, regardless of the quantity used. At Johns Hopkins where they have a pedigreed stock, raised in their laboratory of hygiene, their results have been uniformly positive with one injection. I think it is wise when buying rabbits indiscriminately on the market to take into consideration these possible differences. In the last few days while I have been giving a demonstration here in the booth at the Scientific Exhibit, time after time men have come to me and said: "We have used immature rabbits and we have used one injection and it doesn't work." Some of them have been so discouraged they have been giving up the test. Those who are not fortunately situated in getting good rabbits may well listen to a word of caution. I think in an effort to simplify this test one may simplify it into oblivion by making the procedure altogether too simple. I would urge that unless one knows absolutely the kind of stock dealt with, one should use more than one injection. In the paper of Drs. White and Severance false positives were not encountered. The errors were made on the side of false negatives. I feel quite confident that if Drs. White and Severance would use more than one injection the results might be better. I may indicate some further quantitative studies on the subject. If one titrates the amount of this effective substance in the urine, he will find that in a seven months pregnancy as little as 1/16 cc. of urine injected into a suitable rabbit will give a positive response. If, however, one uses an adult animal, but an animal that is not in heat, that quantity will not do it. One may inject many times that quantity and it will not do it. In order to get an effective response of the urine of pregnancy with a minimal quantity, one must use a rabbit that is known to be in heat. One cannot tell from external inspection whether or not the rabbit is in heat. By comparing that reaction with the reaction in immature rats, by actual titration, I have found that the rabbit is about thirty to forty times more sensitive, weight for weight, than the immature rat. So there is an advantage in using the rabbit on that score. But the advantage is not so great as to guarantee something approaching 100 per cent accuracy with one injection if one uses indiscriminately rabbits bought on the market. If during the period of isolation the rabbit happens to drop a litter of young while under observation, that rabbit is immediately fit for use; in fact, that rabbit is much more sensitive than any other rabbit one can get.

DR. BARTON C. HIRST, Philadelphia: I have not done experimental or laboratory work. My only excuse for appearing in this discussion is that during my professional lifetime I have watched the success or failure of all these methods of precision in the diagnosis of pregnancy, the Abderhalden test, the placenta inoculation, the glycosuria test, and finally this test of the pituitary hormone in the urine; they have all been utilized in my practical work. One should not forget the glycosuria method. I am still employing it as a practical method suitable for the ordinary clinician. But reading of the work of Drs. Friedman and Lapham, I got Dr. Kolmer of the Graduate Hospital to provide the facilities for using the hormone test, and so far I have found it the most satisfactory of any of them. But I still find myself occasionally reverting to the glycosuria test, which is so easy and so simple, requiring so little special preparation and special knowledge. As far as I can see at present, clinicians will depend in the future mainly on this Friedman test as the most accurate of any that have been presented to their notice, but occasionally they will resort for reasons of its simplicity and ease of application to the glycosuria test, which for some years past has proved fairly reliable.

DR. FRED O. PRIEST, Chicago: The use of rabbits as advised by Friedman and by Schneider instead of mice as used in the Aschheim-Zondek test cuts the time required to about one fifth. Rabbits ovulate generally only after copulation; ovulation can occur, however, if one female climbs on another or can even be produced by friction of the genitalia. Therefore, it has been advised to use only immature rabbits which because of their age could not be pregnant. Exercising these precautions I have, however, encountered pregnancy in supposedly virgin rabbits and corpora lutea among those which had supposedly been kept isolated. I recommend the following modification of the Friedman test: I take any available rabbit over 12 to 14 weeks of age that has been in isolation for at least one day, preferably longer. This isolation period removes the possibility of ovulation occurring from stimulation before the test is begun, because ovulation will occur from any stimulus within eight to twelve hours. I frequently use rabbits that I have on hand and that have been used for previous laboratory work. First, I do a laparotomy on the animal, and this is the main point of my modification, thereby definitely eliminating all confusing factors. If the animal is not pregnant I sketch each ovary so as to record accurately the location of follicles, corpora lutea, and so on. Then 10 cc. of suspect urine is injected into a marginal vein of the ear. At the end of from eighteen to twenty-four hours the rabbit is reoperated on through the same incision and the test read. In this way I can interpret actual changes in the ovaries which have occurred as the result of the injection. The reading of the test should be done under the same conditions as at the time of the injection and first inspection, that is, while the rabbit is alive. A relatively easy reading may become a questionable one if the animal is killed and circulation in the ovary is interfered with before the reading. This technic also cheapens the cost of the test by doing away with premium prices for certified aged rabbits, and eliminates keeping them isolated for long periods of time. The rabbits can be used for subsequent injections. I injected one rabbit under sodium amytal anesthesia and made almost hourly observations of the genitalia for a period of twenty-four hours. Hyperemia of the ovaries, tubes and uterus began in three hours. A slight elevation of follicles could be noted at the same time. This progressed until at the end of ten hours the picture of a positive test was present. Marked distention and coiling of the uterus appeared at six to seven hours and persisted until the animal was killed at the end of twenty-four hours.

DR. JACOB HOFFMAN, Philadelphia: I have had occasion to use the Aschheim-Zondek test in several hundred cases. Recently, I have made use of the modified Aschheim-Zondek test of Friedman, when time was an important factor. The female sex hormone test developed by Mazer and Hoffman has been used in each case as a check-up on the anterior pituitary tests. From our experience, we find that in normal pregnancy all the tests are reliable. I believe that each man should work with a test with which he is more familiar. We use the female sex hormone test because it has yielded fewer false positives than has the anterior pituitary test. This is especially true in cases of endocrine unbalance and during the menopause. I use this test in Dr. Anspach's service at the Jefferson Hospital; in the first hundred cases only one false positive was encountered. Much depends on the proper technic employed and on the correct interpretation of the vaginal smear of the mouse. The advantages of the female sex hormone test are that it is more practical in the hands of the average gynecologist and is less expensive than the anterior pituitary tests. Castration takes only a few minutes and is a simple procedure. A stock of 100 castrated mice can be used for many months in the average hospital, because the animals can be used again and again, provided a rest period of three weeks is allowed them. A technician may be dispensed with for there are no histologic sections to be made. All that is necessary after the injection of the suspected urine is the taking of a vaginal spread. When this shows a preponderance of non-nucleated epithelial cells and the absence of leukocytes, it is indicative of a positive reaction. The Aschheim-Zondek test and modification of it are less reliable and give a greater percentage of false positives, especially in the endocrinopathies and menopausal cases, than does the female sex hormone test.

DR. FRED L. ADAIR, Chicago: In our laboratory, Dr. Davis has been carrying on some work with the Aschheim-Zondek test. We worked first with mice and found a large mortality which interfered with the completion of our tests. So we switched first to female rats and later applied the test to male

rats. Now we use the test indiscriminately on both male and female rats and, so far as we can tell, the test seems to be equally satisfactory in the two sexes. There is, however, a little difference in the technic. The female rats have to be immature. We think the best age is from 22 to 32 days. Their weights vary considerably in this period. We usually inject a smaller amount of urine in these cases than we do in the males, using a dose of about 1 cc. twice a day for two days, and then we allow them to rest for about seventy-two hours and do the autopsy and examine the genitalia. In the male the age doesn't seem to be such an important factor. We select male rats weighing between 40 and 60 Gm. and inject the urine in larger amounts, about 2 cc. twice daily or in forty-eight hours, sometimes giving them an extra dose of urine in the meantime, and perform an autopsy on them seventy-two hours after the completion of the last injection. In some of the males we have noted a descent of the testes as the result of this injection. As a modification of the technic we have also used intraperitoneal injections of the urine in these test animals and found it quite satisfactory. I have a few slides I wish to show. The first one is from the literature showing the apparent occurrence of the ovarian and pituitary hormone at different periods of pregnancy. The pituitary apparently appears earlier, that is, if it is pituitary, and this disappears earlier subsequent to pregnancy. This slide shows the female genitalia of the rats, the control on the left and the others on the right, showing a definite hypertrophy of the genitalia. The next one also shows the color changes in the control and experimental animals. This one shows the changes in the male rat. There is some congestion of the testes, but the principal changes are in the secondary sex glands of the male. The changes are the hyperemia, the increased size, and increased amount of secretion.

DR. ARTHUR FIRST, Philadelphia: In the past year we have performed 250 pregnancy tests in problem cases at the Jefferson Medical College Hospital under the supervision of Dr. P. Brooke Bland. Briefly there are two biologic tests for pregnancy, one depending on the presence of anterior pituitary sex hormone in the urine, to which the names of Aschheim-Zondek and Friedman are attached, and the other on the presence of female sex hormone in the urine, to which the names of Mazer and Hoffman of this city are attached. After a study of 250 cases we have come to the conclusion that the female sex hormone test is somewhat the more reliable of the two tests because of the fact that in problem cases of endocrine dysfunctioning, menopause, amenorrhea and functional sterility there is often a compensatory pituitary hypertrophy which may manifest itself by an increase of anterior pituitary hormone in the blood, and consequently in the urine, and so may render a false positive (7 per cent in our series). There is no condition which we have as yet encountered which will produce an hypertrophy of the ovaries sufficient to yield an increased amount of female sex hormone other than pregnancy. As a result we have not obtained false positives in a series of 129 nonpregnant patients when the female sex hormone test of Mazer and Hoffman was employed. We therefore recommend that both the female sex hormone and the anterior pituitary sex hormone tests be run simultaneously on each urine specimen in order to give the most accurate results.

DR. P. F. SCHNEIDER, Evanston, Ill.: We have been fortunate in having the views of Dr. Friedman in regard to the effect of various strains of rabbits on the accuracy of the test and the variations that may occur in different breeds of rabbits at similar ages. In the present series of cases we have used practically without exception the same breed of rabbits from the same source, and our results indicate that it is a considerable factor in the reduction of error. The particular circumstances under which the test is done, whether it is in a laboratory or where facilities of that kind are not available, govern the particular variations of the technic that are used. One thing that this series has helped to emphasize has been the particular conditions in which the test is of value. The test is particularly useful in the differential diagnosis of pregnancy and the primary and secondary amenorrheas. It is particularly valuable in the amenorrhea following pregnancy when the menses have not been reestablished. In the diagnosis of ectopic pregnancy, the test should be of rather marked assistance when the diagnosis can be made prior to interruption of the pregnancy. One of the most valuable aids of the test is as a prognostic measure in the presence of hydatid mole and chorio-epithelioma. The experiences cited demonstrate that it can usually be determined whether complete removal of the hydatid mole or chorio-epithelioma has been accomplished. Other instances in which the test may be of value are prior to pelvic operation to eliminate the possibility of a pregnancy; cases in which uterine instrumentation is used, such as tubal inflation; injection of iodized oil, and before treatment with radium or x-rays. The warnings given by Dr. Friedman deserve particular emphasis, namely, that it is essential to use conservatism in the application of the test and also to assure oneself that the particular method being used coincides with the facilities available to make the test reach the degree of accuracy that is necessary.

DR. MILO R. WHITE, Detroit: In regard to the Brouha test, many more observations are needed before this reaction can be evaluated. It is hoped that other investigators will see fit to do so. Dr. Friedman deserves no small amount of credit for his contribution to this work.

SUBPHRENIC ABSCESS *

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ATLANTA, GA.

Subphrenic abscess is an important surgical problem because it occurs as a complication of the most common surgical diseases: appendicitis, cholecystitis and peptic ulcer. It is a difficult problem because the diagnosis is frequently puzzling, the treatment hazardous and the mortality high.

The condition was first described by Barlow in 1845, but it was not until 1879 that von Volkmann recorded the first operation for its cure. The most comprehensive papers on the subject are those of Barnard,[1] who described accurately the anatomy of the subphrenic region and reported 76 cases; Piquand,[2] who collected 890 cases, Lockwood,[3] who reported 113 cases from the Mayo Clinic, and Fifield and Love,[4] who reported 78 cases. Statistics based on such numbers show with fair accuracy the anatomic location of the abscess, the origin of the infection and its clinical course.

ANATOMY

A study of subphrenic abscess is largely anatomic since the pus is localized in well defined areas. A knowledge of the anatomy involved is necessary if drainage is to be performed by the most direct route and with the least danger of spreading the infection. A complete description of the subphrenic spaces was made by Barnard,[1] which with minor changes is here summarized.

The forward convexity of the lumbar spine together with the posterior convexity of the lower thoracic and sacral regions would by gravity direct the flow of the fluid into the pelvis and the subphrenic regions with the patient in the horizontal position. The lumbar convexity is therefore the summit of the "water shed" with an upper and a lower slope. Direction is further guided by the "gutters" formed by the mesentery of the small intestine and the ascending and descending colon. The

* From the Department of Surgery, Emory University School of Medicine.

* Read before the Section on Surgery, General and Abdominal, at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Barnard, H. L.: Surgical Aspects of Subphrenic Abscess, Brit. M. J. **1**: 371-377, 429-436, 1908.
2. Piquand, G.: Les abcès sous-phreniques, Rev. de. chir. **39**: 156, 373, 812, 962, 1909.
3. Lockwood, A. L.: Subdiaphragmatic Abscess, Surg. Gynec. & Obst. **33**: 502 (Nov.) 1921.
4. Fifield, L. R., and Love, R. J. McN.: Subphrenic Abscess, Brit. J. Surg. **13**: 683 (April) 1926.

rôle of the lymphatics in the upward drainage of infection, and of the possibly lower abdominal pressure in the upper abdomen, probably plays a minor part in the localization of the abscesses in the subphrenic areas.

The subdiaphragmatic area may be divided into five regions, as follows:

1. Suprahepatic, right intraperitoneal.
2. Subhepatic, right intraperitoneal.
3. Suprahepatic, left intraperitoneal.
4. Subhepatic, left intraperitoneal.
5. Suprahepatic, right extraperitoneal.

1. The right intraperitoneal suprahepatic space lies directly between the liver and the diaphragm. An abscess here is limited medially by the falciform ligament, posteriorly by the right lateral ligament, and laterally and in front by adhesions between the diaphragm and the liver. This location is the most common location of subphrenic abscess, since abscess of the liver, either pyogenic or amebic, is likely to rupture here. Infection along the right lateral gutter from appendicitis or pelvic infection usually localizes here (fig. 1). Infection may pass from the right subhepatic fossa to this region around the lateral margin of the liver, or, vice versa, the subhepatic fossa may be a secondary seat of abscess from this region. Either space may by gravity infect the right lateral gutter or pelvis. Failure of symptoms to subside after drainage of an abscess in the suprahepatic space, the subhepatic space, the loin or the pelvis should lead to a suspicion of an abscess in one of the other areas, since infection frequently passes from one to the other.

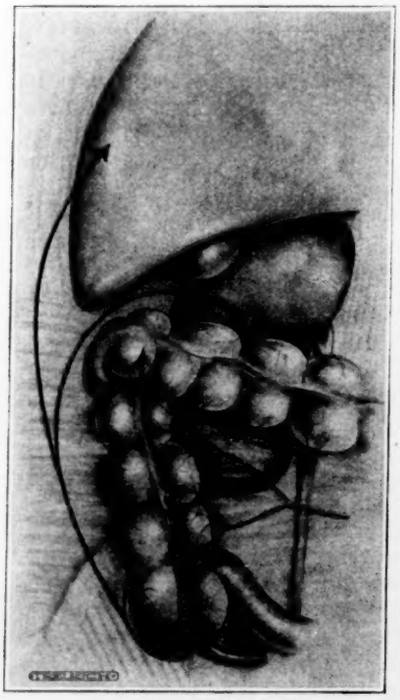

Fig. 1.—The path of infection from the appendix to the right suprahepatic intraperitoneal region, the subhepatic region and the right extraperitoneal suprahepatic region. (From Fifield and Love.)

2. The right intraperitoneal subhepatic space, often described as Rutherford Morrison's kidney pouch, is pyramidal, with its base formed by the right overhanging lobe of the liver and the diaphragm with its apex pointing to the foramen of Winslow and the duodenum (fig. 1). Anteriorly and above is the liver and gallbladder, and below the transverse colon. The posterior boundary is formed by the peritoneum overlying the right kidney and the diaphragm. Abscess here usually results from rupture of a duodenal ulcer, empyema of the gallbladder, or infections following operations on the gallbladder, stomach and duodenum. It communicates with the right lateral gutter, and infections from the appendix reach it by this route. As previously stated, it communicates with the right suprahepatic space around the right margin of the liver and may be a source of secondary abscess from this area or may secondarily infect it. An abscess here is limited behind and above by the lower layer of the coronary ligament, anteriorly by adhesions between the omentum, transverse colon, abdominal wall and liver, to the left by gastric adhesions, and from the lesser sac by adhesions about the foramen of Winslow.

3. The left suprahepatic intraperitoneal or perisplenic space is bounded above by the diaphragm, below by the left lobe of the liver, on the right by the falciform ligament and to the left by the spleen. An abscess here is limited behind by the left lateral ligament and in front by adhesions between the omentum and the abdominal wall. Infections from the stomach (perforating ulcer, cancer, or following resection), spleen, or colon are most likely to localize in this region. Pelvic infection reaches it by way of the left lateral gutter. Appendiceal infection beginning on the medial side of the cecum may rarely pass upward between the descending colon and the vertebral column to the splenic flexure and thence to this space.

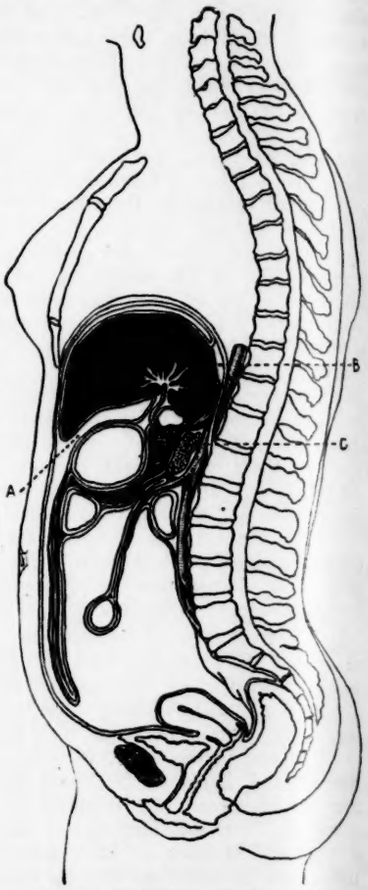

Fig. 2.—Reflexions of the peritoneum showing the relations of the subhepatic space and the lesser sac to the stomach and duodenum: *A*, subhepatic space; *B*, bare area; *C*, lesser sac. (From Deaver's Surgical Anatomy, Philadelphia, P. Blakiston's Son & Co.)

4. The left subhepatic intraperitoneal space is the lesser peritoneal sac (fig. 2). It is limited below by the transverse colon and in front by the lesser omentum and the stomach. Behind it lies the pancreas and left kidney. Above, it extends between the liver and the diaphragm as high as the "bare area" of the liver. Infections here are usually caused by perforations of the posterior wall of the stomach. An abscess here is limited to the sac since the adhesions usually close the foramen of Winslow.

5. The right suprahepatic extraperitoneal space is that region lying above and behind the "bare area" of the liver (fig. 3). An abscess in this area is bounded above and behind by the diaphragm and in front by the right lobe of the liver. Its extent is limited in front by the anterior layer of the coronary ligament and below by the posterior layer. To the right and left it is limited by the meeting of these two layers to form the right and left lateral ligaments. Infection reaches this space posteriorly through the extraperitoneal cellular tissue, with which it is continuous below, and anteriorly between layers of the falciform ligament. Hence infection from a retrocecal or retroperitoneal appendix, an

abscess of the kidney, or the posterior (retroperitoneal) portion of the duodenum reaches this area by spreading upward and separating the peritoneum from the retroperitoneal cellular tissue. By its connection with the falciform ligament it may point in the epigastrium, or, vice versa, infection may pass from the abdominal wall through the falciform ligament to the "bare area" of the liver (fig. 4). Abscess of the liver frequently ruptures into this area. As an abscess here increases in size the diaphragm is raised and the liver pushed down since the ligaments of the liver stretch, and adhesions are not present between the liver and the diaphragm as in the right suprahepatic intraperitoneal abscess.

SOURCE OF INFECTION

In 890 observations, Piquand[2] found 251 cases of gastric origin, 191 from the appendix, 131 hepatic or biliary, 56 intestinal, 40 splenic, 27 pancreatic, 32 originating in the thorax, 26 renal, and 17 genital. This follows generally the observations of Barnard, Lockwood, and Fifield and Love, who name gastric ulcer, hepatic and biliary disease, and appendicitis as the principal etiologic factors.

PROGNOSIS

Without operation, practically all patients die. The only favorable outcome without operation is perforation into a bronchus. With operation, the mortality is approximately 50 per cent.

SYMPTOMS, SIGNS AND DIAGNOSIS

Since subphrenic abscess is a complication rather than a primary disease, the history of the original infection is of the greatest importance in diagnosis. As a rule, the primary disease is well known and an operation for its cure has been undertaken. This is usually a perforated peptic ulcer, empyema of the gallbladder, or suppurative appendicitis. Usually following operation there is a variable period of improvement, followed

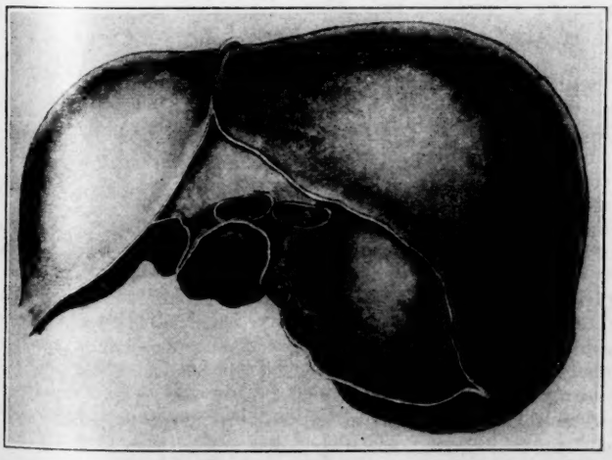

Fig. 3.—The liver from above and behind. The "bare area," seat of right extraperioneal suprahepatic abscess, is shown. Pus is limited above and below by the layers of the coronary ligament but may pass forward in the falciform ligament. (After Spalteholtz.)

by evidence of toxemia and infection; such as loss of appetite, irregular temperature, leukocytosis and profuse sweating. Occasionally pain in the lower part of the chest or in the epigastrium gives an indication of the location of the trouble.

Physical signs vary with the size of the abscess and its anatomic location. In abscess of the subhepatic area or lesser sac, bulging may be seen in the epigastrium or below the costal margin, and on palpation a tender mass may be felt. Occasionally the liver is pushed down by a right extraperitoneal abscess. In subhepatic infections the ribs may bulge and movements of the chest are limited, and pressure on the lower ribs usually elicits pain. Examination of the chest shows evidence of consolidation from lung pressure of an elevated diaphragm, from pneumonia, from pleurisy with effusion or from empyema due to rupture of the abscess through the diaphragm. There is dulness on percussion with absence or diminution of the breath sounds. If gas is present in the cavity there may be an area of shifting tympany above the liver dulness—an infrequent sign. The greatest help in diagnosis is roentgen examination. The diaphragm is elevated, fixed and frequently deformed, and, if gas is present, it is easily seen. If subphrenic abscess is suspected, pneumoperitoneum may be of great value in determining the presence of adhesions between the diaphragm and the liver.

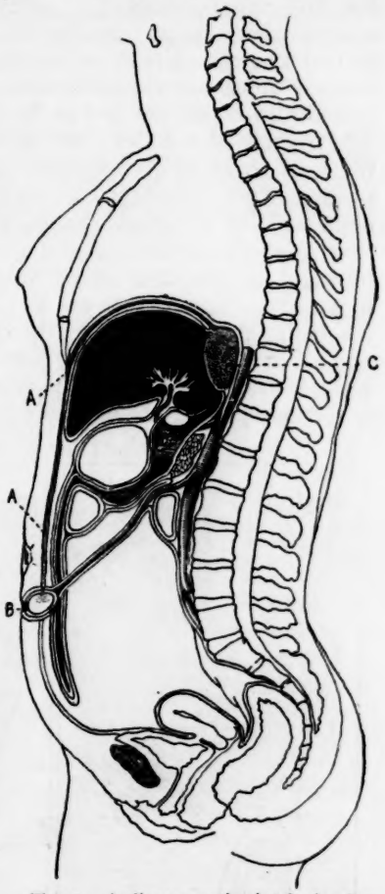

Fig. 4.—A diagrammatic sketch showing the path of infection from an ileostomy; the sinus tract ran beneath the right rectus muscle to the falciform ligament and through it to the right extraperitoneal suprahepatic space: *A*, *A*, sinus tract; *B*, ileostomy; *C*, subphrenic abscess.

TREATMENT

With mortality so high, even with surgical intervention, it is evident that treatment should be directed largely toward prevention. This can best be accomplished by early operation in cases of perforated gastric ulcer, biliary disease and appendicitis. Careful exclusion of the subhepatic pouch in operations on the stomach and gallbladder, and dependent drainage of this area when infection is present there, will go far in the prevention of abscess in this area. Drainage of the right lateral gutter in suppurative appendicitis will often prevent the upward spread of infection by this route. While Fowler's position theoretically causes drainage toward the pelvis, this procedure is probably overemphasized as a preventive measure, since it does not prevent lymphatic spread.

If the abscess develops in the subhepatic region and points anteriorly in the abdomen, its operative approach and drainage can be easily accomplished. As a rule, adhesions will have walled off the infection from the general peritoneal cavity. Incision should be made over the most prominent part of the tumor, and if adhesions are not present the peritoneum should be packed against the abscess wall and drainage deferred for two or three days.

When the abscess is situated in the suprahepatic region and protected by the overhanging ribs, the operative approach is more difficult. The problem then is to drain the pus by the most direct route without spreading the infection into the pleural space or into the abdominal cavity. I believe this can best be accomplished by a transpleural operation performed in two stages.[5] Under procaine or nitrous oxide and oxygen anesthesia about 2 inches (5 cm.) of the eighth and ninth ribs are excised in the posterior axillary line. The intercostal muscles with the nerves and vessels are removed so as to give a clear view of the underlying pleura. The costophrenic sinus may have already been obliterated by adhesions due to infection, but even then it is safer to sew the parietal pleura to the diaphragm by eight or ten interrupted sutures of catgut placed in a circle. The sutures are left long and are tied over the gauze packing in order to cause firmer adhesions and safer obliteration of the costophrenic angle. Forty-eight hours later the gauze is removed and the sutures, previously placed, are used for traction. An exploring

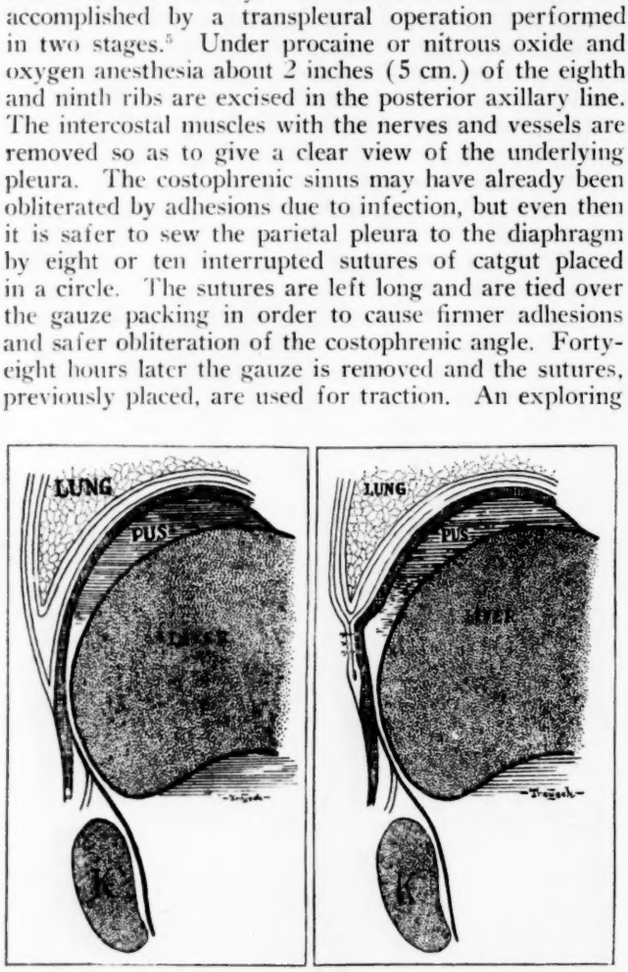

Fig. 5.—The drawing at the left shows the position of pus in the suprahepatic region in relation to the lung and pleura; at the right, the costophrenic sinus obliterated by sutures. (Modified from Nather and Ochsner.)

needle can then be passed with safety through the diaphragm into the subphrenic space. If pus is encountered the needle is followed into the abscess and the cavity drained (fig. 5). If pus is not found with the needle there is no danger in opening the diaphragm and exploring the top and posterior surfaces of the liver with the fingers. When pus is encountered, it should be drained without further exploration or else the protective barrier of the abscessed wall may be ruptured and the infection spread.

CONCLUSIONS

1. Subphrenic abscess occurs as a complication of the most common surgical conditions: peptic ulcer, cholecystitis and appendicitis.

2. Infection spreads along anatomic lines to well mapped subphrenic areas. A knowledge of these areas is necessary for diagnosis and proper drainage.

3. The transpleural operation, done in two stages, is advocated as the safest and most direct approach for abscess above the liver.

5. Elkin, D. C.: The Transpleural Operation for Subphrenic Abscess, Ann. Surg. **92**: 477 (Sept.) 1930.

ABSTRACT OF DISCUSSION

DR. GEORGE P. MULLER, Philadelphia: I have never seen a subphrenic abscess consequent to suppuration of the gallbladder, and I believe that such an occurrence must indicate in most cases either a secondary collection to a liver abscess or leakage of infected bile which works round the liver to its upper surface. I have had one such instance. Many of these cases that have been reported of subphrenic abscess following suppurative cholecystitis are instances of subhepatic abscess. I do not think that the collection under the liver should be properly classed as a subphrenic abscess. Most of the cases will be found to be secondary collections in the course of acute perforated appendicitis with abscess formation. I treat the high abscess by adequate exposure and drainage through the loin in addition to several tubes anteriorly. In the last ten years I can find the record of only one instance of subphrenic abscess as a complication of about 1,800 operations for acute appendicitis. I have had one subphrenic abscess on the left side after splenectomy, one associated with an encapsulated empyema on the right side, and two extraperitoneal collections above the right kidney. The diagnosis is not difficult if two things are kept in mind: the probability of the collection when the patient continues septic after the surgical treatment of the condition which is liable to this complication, and a careful roentgenographic examination. The latter cannot be emphasized too strongly. One should remember that a fixed high diaphragm causes a hypoventilation of the base of the lung, and unless the roentgenologist is aware of this a diagnosis of basal pneumonia may be made. The method of approach, as Dr. Elkin has stated, depends on the location of the collection. The most frequent site is the right suprahepatic area, close to the diaphragm. Here the transpleural approach is ideal if the surgeon has time to effect the adhesions necessary to prevent infection of the pleural cavity. In collections somewhat lower, and when high rigidity and tenderness and possibly a vague mass are present, the abdominal incision is necessary. In one case I had to resect the eighth rib close to the sternum to get access to the collection. In the extraperitoneal abscesses, well out and above the kidney, the subpleural approach through the loin is best. On the left side the anterior approach is often necessary. I have noted that many writers caution against the abdominal approach for fear of infecting the peritoneal cavity, but if packing is properly placed and an efficient aspirator used there is little danger of inducing a spreading peritonitis.

DR. HENRY W. CAVE, New York: The roentgen examination, of course, is of great importance. However, it is often confusing, for sometimes a fibrosis of the lung will simulate closely the shadow of a subphrenic abscess. I think I have made more mistakes in the diagnosis of subphrenic abscess by confusing it with empyema. In both of these conditions the cupola of the diaphragm is fixed. In empyema it is flattened, and in the subphrenic abscess it is elevated. I believe that most of these patients, regardless of whether there is a ruptured peptic ulcer or a ruptured appendix, with peritonitis, should be placed in the Fowler position immediately on regaining consciousness. The ideal treatment, of course, is to empty the abscess without subsequent peritonitis or pulmonary complications, and, if possible, to open below the reflexion of the pleura or extraperitoneal cavity. The two-stage transpleural procedure is the safest, particularly if the abscess lies directly above the surface of the liver. From 1910 to 1930 I had twenty-five cases with subphrenic abscess. The site of the abscess in twenty-two was on the right, two on the left, and one bilateral. Of acute perforative peptic ulcers, I had five cases that produced a subphrenic abscess. The total number of acute perforative peptic ulcers from 1910 to 1930 was 154. The proportion of subphrenic abscesses developing following acute perforative ulcers was 3.24 per cent. Subphrenic abscess developed in twelve of my patients with acute suppurative appendicitis with drainage. The total number of cases of acute suppurative appendicitis with drainage from 1910 to 1930 was 1,598, and those were all cases in which there was a localized peritonitis or a diffuse peritonitis. The proportion of subphrenic abscesses developing following acute suppurative appendicitis with drainage was 0.75 per cent. Two subphrenic abscesses followed operations on extrahepatic bile ducts; one followed a gunshot wound of the right lower

part of the thorax; one followed operation for pancreatic cysts; in four in which no previous operation had been done, there was a history suggesting acute appendicitis or ruptured peptic ulcer. My method of treatment was a one-stage transpleural operation in thirteen, a two-stage transpleural operation in six and a subcostal operation in six. My mortality was pretty high, and I think it was because back in 1910 to 1930 almost all the interventions were one-stage transpleural procedures. Ten of the twenty-five patients died, a mortality of 40 per cent. In seven of the ten patients who died, necropsy was performed.

DR. MOSES BEHREND, Philadelphia: I am particularly interested in the incidence of subphrenic abscess in those cases of cholecystectomy in which the abscesses were drained and those in which they were not drained. I believe that the incidence of subphrenic abscesses is just as great in cases of cholecystectomy that are drained as in those not drained. There is also the incidence of subhepatic abscess and the occurrence of subphrenic abscess in the same individual. These must be differentiated, because if one operates on the subhepatic abscess and the latter communicates with the subphrenic abscess, the patient will not be cured. I had one example of this only recently in a woman operated on for cholelithiasis, in whom the gallbladder was removed and a subhepatic abscess developed. Coincidentally there must have been a subphrenic abscess also. The roentgenogram showed that there was a marked shadow in the region of the liver. I opened the subhepatic abscess, and a large amount of foul-smelling pus exuded. I thought that I had cured the patient, but post mortem there was found a sinuous tract leading up to the subphrenic space, and this also contained the same character of fluid. The patient died as the result of toxemia. I can also add that in suppurative appendicitis the occurrence of subphrenic abscess is indeed a rare condition. I see more cases of subphrenic and subhepatic abscesses as the result of gallbladder surgery.

DR. H. A. ROYSTER, Raleigh, N. C.: I believe the diagnosis of subdiphragmatic abscess is difficult; but unless one keeps the condition in mind and suspects it, one is going to overlook many. I have had patients die on a diagnosis of hypostatic basal pneumonia or empyema who undoubtedly had subdiaphragmatic abscess. I agree with Dr. Muller, who stated that he never had seen a case of this sort following a cholecystitis or an operation on the gallbladder, and I have seen only one following a ruptured peptic ulcer. Practically all of these cases occur from neglected appendicitis. One must remember the trough which runs on each side of the colon, inviting the transference of infection along this area, no matter in what position the patient may be placed. The roentgenogram has at times given me more confusion than it has assistance. These cases occur late after everything has gone well for a while. Then one sees the little rise in temperature, with practically no pain and little tenderness. The important thing is to determine it early by suspicion. The transpleural route is undoubtedly the safe and the ideal approach. I have never been able to diagnose these abscesses by puncture, but in any case of suspicion the part should be explored.

DR. DONALD MACRAE, JR., Council Bluffs, Iowa: One point that has not been brought out in the diagnosis of subphrenic abscess is the pain in the shoulder. Practically all the patients I have seen have had pain in the shoulder. These cases come on quite late after operation. In my experience it is five or six days, a week or ten days, and the patient is making an uneventful recovery and everything is satisfactory, and then he begins with his low-grade fever; he is not feeling very well, he has a little pain in his chest, a chill, perhaps pains in the right or left shoulder. They come on insidiously, gradually. Here is where one should perform roentgen examination immediately. I do not believe that there is any excuse for the aspirator in a search for pus in this location unless one knows exactly what one is doing, which one never does. I don't believe any one knows where the other end of that needle is, and I think that a great deal of damage may be done. I absolutely favor a two-stage operation. In fact, in one case that I had recently following a ruptured duodenal ulcer, on the right side I opened the pleura deliberately and had the diaphragm exposed and waited five days before opening. I think the day is coming when one is going to have less fear of opening the pleura with the proper technic. Then having a correct connection with the diaphragm is not taking the chances or having the uncertainty of contaminating either the pleura or the peritoneum. I have practically discontinued drainage of the gallbladder, because I take the gallbladder out, so I don't have any gallbladder to drain, but I still put a small tube down to the cystic duct, and I have never seen a subdiaphragmatic abscess in any case of cholecystectomy. The only cases I have seen have followed operations for appendicitis and ruptured ulcers of the stomach. In the way of prophylaxis, in one of my cases in which operation was performed by a friend of mine, the appendix was tied off with plain number 0 catgut without turning in of the stump. I am satisfied that in this particular case something gave way, the result of insecure ligature at the stump of the appendix, which accounted for the subphrenic abscess.

HYPERTHYROIDISM ASSOCIATED WITH THE PARKINSONIAN SYNDROME *

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The association of exophthalmic goiter with paralysis agitans is comparatively rare. Most of the cases reported in the literature show that the association is an accidental one. In the majority of instances the hyperthyroidism preceded the onset of the parkinsonian syndrome. In recent years, attention has been called to the presence of signs and symptoms referable to the vegetative nervous system in acute and in chronic encephalitis, which have a predilection for the basal ganglion-midbrain regions. But even before the involvement of the hypothalamic vegetative centers was recognized as the cause of metabolic and other disturbances, the sympathetic system was believed to be affected in exophthalmic goiter and to bear some relation to it. More recently, the suprarenals, the medulla of which is of the chromaffin sympathetic system, have been shown to stand in definite causal relation to hyperthyroidism.

From time to time, suggestions [1] have been made that physiologic or pathologic disturbances in the vegetative centers of the interbrain may have something to do with the production of many syndromes previously regarded as independent disease entities. The question, too, has been raised whether, in a syndrome such as hepatolenticular degeneration, the disease of the liver causes the changes in the brain or, conversely, the involvement of the striatum leads to secondary disturbances in the liver. In encephalitis it has long been known that what may be regarded as dysthyroid symptoms are frequently a part of the clinical picture, even though there was no true exophthalmic goiter. The speculation is also justified as to whether the tremor of hyperthyroidism is not in effect the result of secondary changes in the striatum. In view of all this, the question now arises whether exophthalmic goiter may not in some

* From the Neurological Service of the Montefiore Hospital.
* Read before the Section on Nervous and Mental Diseases at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Kylin, Eskil: Die Hypertoniekrankheiten, Berlin, Julius Springer, 1926, pp. 95-101. Bascourret, M., and Decourt, Jacques: Les poussées évolutives de la maladie osseuse de Paget, Rev. neurol. 1: 606 (April) 1929. Kuré, K.: Pathogenie der Dystrophia musculorum progressiva, Klin. Wchnschr. 6: 691 (April 9) 1927. Kraus, W. M., and Perkins, O. C.: A Syndrome of the Cerebral Origins of the Visceral Nervous System: The Question of the Somatic and Visceral Atrophy and Review of Reported Cases of Unilateral Atrophy, Arch. Neurol. & Psychiat. 18: 249 (Aug.) 1927.

way be the result of some altered physiologic state or pathologic change of the hypothalamic vegetative centers. The proximity of these structures to the regions affected in paralysis agitans and the occurrence of hyperthyroidism with parkinsonism in two cases in which the one syndrome preceded the other may possibly furnish clinical confirmation of theoretical views. In any event the following two cases, aside from their speculative interest, are worthy of record because of their clinical rarity:

REPORT OF CASES

CASE 1.—M. L., aged 45, formerly a painter, was admitted to the Montefiore Hospital in August, 1929. His past and family history were irrelevant except for the fact that in February, 1920, he was in a hospital for ten days for what was regarded as influenza, and that in June, 1927, he had a sudden attack of vertigo lasting fifteen minutes. The present illness dates back to June, 1928, when he suddenly fell unconscious. When he regained consciousness six hours later in a hospital, he found that his right arm and leg were paralyzed, that he could not speak and that he had to be fed. He regained his speech within four days, the power of his limbs gradually returned, and within a number of weeks he was able to walk. Immediately on regaining consciousness he noticed a tremor of the right hand and to a less extent of the right leg. The tremor in the latter ceased very soon, and the former improved gradually. Tremors in both regions returned, however, becoming quite marked three months before the patient's admission to the hospital. The left upper limb also began to show tremor. There was no fracture of the skull.

In February, 1929, it was first noticed that the patient's eyes were becoming prominent. Following the attack of unconsciousness the bowels became constipated and the libido diminished. About one year before admission to the hospital, following some hypodermic medication, he had polydipsia and polyuria for a few weeks. He also complained of transient hot flushes. A neurologic examination in July, 1928, one month following the fall, showed poor convergence on the left side, evidence of a right hemiparesis including a mild central facial paresis, right hemihypalgesia of the thalamic type, masked facies, parkinsonian tremor on the right and impaired associated movements, more marked on the right. Examination at the Montefiore Hospital in August, 1929, showed bilateral exophthalmos, vasomotor instability with tendency to hyperhidrosis, pulse of 120, normal blood pressure and negative Wassermann reactions of the blood and spinal fluid. Urinalysis gave negative results. Chemical analysis showed the blood to be normal. Roentgenograms of the skull and chest were negative. The sugar tolerance curve was normal, and there was a basal metabolic rate of plus 40. Neurologically, the patient showed masked facies, loss of associated movements, especially on the right, a parkinsonian tremor on the right and a finer one on the left, some right-sided weakness, active but equal deep reflexes, a right Babinski sign, present abdominal reflexes, and mild hypesthesia for all forms of sensation on the right side. The right pupil was larger than the left; both reacted promptly to light and in accommodation; the left eye converged poorly, and there was a right supranuclear facial paralysis. The tongue was tremulous and deviated slightly to the right, and the fundi were normal. The patient's mental status was normal except for mild emotional instability.

The patient was treated medically for seven months. He received compound solution of iodine (Lugol's solution), which temporarily improved the tremor and reduced the basal metabolic rate. Roentgen treatment over the thyroid brought no results. It was agreed that the patient had a parkinsonian syndrome with residual and gradually vanishing right pyramidal tract signs but that the hyperthyroidism was for the moment the more important condition, aggravating the paralysis agitans tremor, and that surgical intervention was indicated. The question of influenza versus encephalitis in 1920 was debated and the possibility of encephalitic parkinsonism was entertained. At the same time, the possibility of exophthalmic goiter following the involvement of the basal ganglion hypothalamic region of the brain was also considered. From the history of the apoplectic attack, a vascular accident had to be considered, even though there was nothing in the cardiorenal vascular system to account for it.

Subtotal thyroidectomy was performed in March, 1930. The goiter was colloidal and slightly cystic. The basal metabolic rate fell to minus 18, then rose to minus 9. The tremors were greatly reduced in intensity, the fine toxic tremor on the left as well as the parkinsonian movement on the right. While the general condition gradually improved, the patient became depressed as a reaction to his continued disability. He was discharged in May.

Reexamination, October 22, showed a gain of 30 pounds (13.6 Kg.) and a mild myxedematous appearance, with a basal rate of minus 10. The pulse was 90 and the blood pressure 142 systolic and 108 diastolic. There was a typical pill-rolling tremor of the right hand, much less pronounced than previously, but no abnormal movements were noted in the right lower limb. There was some bilateral cogwheel rigidity, loss of associated movements, and absence of pyramidal tract signs except for diminished abdominal reflexes on the right. The exophthalmos persisted unchanged. The pupils were somewhat miotic and unequal and did not react at all on convergence. The pupillary responses to light were sluggish. The patient complained of marked epiphora. The marked reactive depression was still evident.

CASE 2.—A. M.,[2] an Italian woman, aged 56, a housewife, was admitted to the hospital, Nov. 9, 1930. The chief complaints were weakness, loss of weight, pains in the lower extremities, dysphonia and dysphagia. The date of onset could not be accurately determined but could be traced back at least four years to 1926. The illness began with insomnia and irritability, followed by moderate pains in the left arm. Soon thereafter the arms became weak and stiff and the fingers contracted. The right arm became similarly involved, then the left leg and finally the right. Gradually the patient found it difficult to get about. More recently the dysphonia and dysphagia set in. There was no history of any acute infection. The past and the family histories were irrelevant. The patient had six children, of whom three are living. The menopause occurred in 1922.

The general medical examination showed an enlarged firm thyroid, the right lobe more prominent than the left. The pulse rate was 120 and the basal metabolic rate plus 68. The heart and lungs were normal, but the teeth and gums were badly infected. Moderate exophthalmos, flushed face and Dalrymple, Möbius and von Graefe signs were all present. Neurologically, the patient showed an immobile facies, loss of associated movements, generalized rigidity, more particularly of the limbs, hands in typical parkinsonian flexion-contraction attitude, and fine tremor of all limbs and some tremor of the tongue and head. All the deep and superficial reflexes were present and equal; there was no Babinski sign; the cerebral nerves and the fundi were normal.

Thyroidectomy was performed ten days after admission. The tremor was markedly lessened and deglutition improved; the pulse came down to 86 and the metabolic rate to plus 15. The other parkinsonian features, aside from the tremor, remained as before.

In this case, too, the question of encephalitis came up because of the onset of the paralysis agitans syndrome relatively early in life, the possibility being considered in spite of the fact that no history of any acute infection was obtained. It was certain, however, that the exophthalmic goiter followed a long time after the advent of the paralysis agitans.

REVIEW OF THE LITERATURE

In 1883, Möbius[3] reported a case in a woman, aged 50, in whom, following the menopause at 44, exophthalmic goiter developed and, five years later, Parkin-

2. This patient was seen at the Sydenham Hospital, in consultation with Drs. Louis Friedman and Samuel Malisoff, through whose courtesy the case report is here included.

3. Möbius, P. J.: Combination von Morbus Basedow und Paralysis Agitans, in Memorabilien, Heilbronn **28**: 147, 1883.

son's disease. He considered both disorders as manifestations of an underlying neurotic state.

Gordon [4] reported a case in a woman, aged 39, who had a goiter for eight years, together with palpitation, tremor and exophthalmos and, seven years later, typical paralysis agitans.

Goldstein and Cobilivici [5] observed the comparatively recent onset of parkinsonism in a woman, aged 45, who for five years had exophthalmic goiter. They also cited a previous case that they had seen.

Tantar [6] reported the presence of paralysis agitans in a woman, aged 42, who had typical goiter with hyperthyroidism. He referred to three other cases and remarked on the presence of basedowoid phenomena in paralysis agitans.

Cacciapuoti [7] relates the case of a man, aged 45, who began to show symptoms of exophthalmic goiter at 39, and in whom, five years later, paralysis agitans developed, following psychic trauma. Cacciapuoti expressed the opinion that the hyperthyroidism and the accompanying hypersuprarenalemia induced vascular changes in the brain.

In 1921, Collier [8] reported a case of exophthalmic goiter with paralysis agitans. This was in a woman, aged 28, who had a goiter for eight years and later a parkinsonian syndrome.

Guillain and Marquézy [9] described a hemiparkinsonian syndrome in a woman, aged 49, who had had typical hyperthyroidism for years and a goiter since the age of 18. The patient was operated on, and the hyperthyroidism disappeared, but the paralysis agitans persisted.

Klein [10] reported the onset of parkinsonism and bulbar symptoms six months after the appearance of exophthalmic goiter. He thought that the cerebral phenomena were due to the thyrotoxicosis, since they regressed following the operation.

Riese,[11] without giving detailed case reports, summarizes his impressions and states that phenomena of exophthalmic goiter occur in disease of the central vegetative nuclei. He also adds that he saw a true case of exophthalmic goiter in a postencephalitic hypokinetic state.

Lupulescu [12] described a case of chronic encephalitis with parkinsonism, schizophrenic mental state and exophthalmos.

Lafora [13] cites a case of chronic encephalitis with parkinsonism and exophthalmic goiter. He thinks that the basedowian syndrome is of central nervous system origin.

Finally, Bassoe [14] described a case in a woman, aged 52, in whom paralysis agitans and exophthalmic goiter developed, following trauma to the head. He believes that if it can be said that the injury brought on the paralysis agitans, then it may be that changes in the vegetative brain centers secondary to trauma brought on the hyperthyroid syndrome. He reports also a case in a woman, aged 28, in whom parkinsonism developed with obesity, probably on the basis of encephalitis, followed later by rapid pulse, high basal metabolic rate and loss of 50 pounds (23 Kg.).

Naccarati [15] studied forty-seven cases of chronic encephalitis, of which twenty-five, or 53 per cent, showed increased metabolic rate, which he ascribed to changes in the vegetative nervous centers. In this connection one might mention the experimental work of Grafe and Grünthal,[16] who injected alcohol and silver nitrate into the hypothalamic region of dogs. Eleven of their fifty experiments were successful. In seven of these the posterior part of the hypothalamus was injured and in all there was a consistent significant lowering of the basal metabolic rate.

Velhagen [17] and Suker [18] commented on the close similarity of the ocular signs occasionally encountered in chronic encephalitis to the classic eye changes of the Graves syndrome. Velhagen concludes that a toxic process in the one case (Basedow) and an inflammatory one in the other affect the same parts of the brain and produce similar clinical features.

Without entering into a discussion of the pathogenesis of exophthalmic goiter, it may be pointed out that the neurogenic theory, more particularly the sympathetic origin, is old. In an inaugural dissertation, "De exophthalmo ac struma cum cordis affectione," published in 1855, Koben [19] first suggested that the symptoms of exophthalmic goiter were due to pressure of the thyroid on the sympathetic. It was not till after Claude Bernard's famous experiments on the sympathetic, in 1862, that this theory was at all developed. Aran first applied this newer knoweldge and explained the disease as due to an irritation of the sympathetic.

Trousseau [20] met certain difficulties by advancing the view that the disease is a neurosis of the sympathetic.

Geigel,[21] in 1866, was the first one to place the lesion in the central nervous system, namely, in the medulla and pons, while Filehne,[22] in 1879, attributed the disease to a lesion in the medulla impairing the vagus. Sattler and Fereol also placed the lesion in the medulla.

Gowers [23] stated that "it is probable that the cause of the derangement is to be sought beyond the sympathetic in the central nervous system."

The influence of psychic trauma acting through the cortex on the central sympathetic has been stressed by a great many writers. Bram [24] rates the incidence of psychic trauma as an etiologic factor in 3,343 cases as

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high as 85 per cent, while Hyman and Kessel [25] affirm the instability of the autonomic system and report that 80 per cent of their patients recovered with rest and psychotherapy.

COMMENT

In the absence of pathologic studies, it is hazardous to venture an opinion as to the significance of clinical signs and symptoms or to attempt any anatomicophysiologic correlation. Therefore the two cases herein reported can serve at best as a question mark. There is no doubt that a pathologic process in the hypothalamic midbrain region, which contains the vegetative brain centers, can give rise to disturbances in metabolism or to various signs and symptoms commonly regarded as sympathetic in nature and to others which hitherto have been attributed to disturbances of the glands of internal secretion. It is only necessary to recall that diabetes insipidus and disturbances in fat metabolism (obesity), which were previously regarded as pituitary syndromes, are now definitely known to be the result of lesions in the tuber cinereum and its neighboring structures. In this connection one may also mention the growing suspicion that the cause of essential hypertension is to be sought in the central vegetative structures.[1] There is also sufficient clinical and experimental evidence to show that involvement of those regions can bring about dysthyroidal manifestations. And theoretically, at least, it must be assumed that psychic trauma, which is so common a precipitating cause of exophthalmic goiter, sets up impulses which in some way affect the brain vegetative centers. But considering all this, the question still remains unanswered whether actual exophthalmic goiter can be caused by involvement of those centers.

The association of paralysis agitans with hyperthyroidism throws some light on the problem but certainly does not solve it. The first question is whether in all such cases it is not merely an accidental association. The rarity of the cases would seem to point to that, and particularly in those instances in which the hyperthyroidism preceded by months or years the onset of parkinsonism. In our own cases and in a few others the paralysis agitans antedated the hyperthyroidism and may possibly stand in some causal relation. Case 1 is of particular interest in that there was some evidence that the patient had encephalitis which passed off as influenza, and also that he had a vascular insult which affected not only the corticospinal pathways but also the adjoining basal ganglions and possibly the hypothalamic region.

Of clinical interest in both our cases was the difficulty in dissociating the hyperthyroid from the parkinsonian tremor. The former is much finer and more rapid, but it overlaid the coarser and slower oscillations of basal ganglion origin. The improvement following thyroidectomy subtracted, as it were, the overtone of tremor and improved the underlying basal ganglion syndrome to some extent. But it may well be that the thyroidal tremor is in reality of basal ganglion origin and caused by toxic changes in those structures. It is interesting, too, that the surgeons hesitated to operate, and it was only after urging by the neurologist and assurance that the paralysis agitans in itself was no contraindication that operation was performed.

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ABSTRACT OF DISCUSSION

DR. SAMUEL BROCK, New York: Of course, the cause of hyperthyroidism is not known. It probably does not lie in the thyroid. The authors propounded a concept of neural causation suggesting that the ultimate pathologic changes occur in the sympathetic centers situated in the floor of the third ventricle. The syndrome of autonomic imbalance as described by Hyman and Kessel may lead to hyperthyroidism by a similar pathophysiology. On the other hand, it should not be forgotten that hyperthyroidism may be caused by various disturbances of the endocrine system. In some recent experiments in which the cortex of the suprarenals was destroyed, the syndrome of hyperthyroidism followed, and some of us have seen hyperthyroidism in certain hypopituitary disorders. Drs. W. M. Kraus, David Sloane and I again called attention a few years ago to the combination of nervous symptoms particularly of the basal ganglion type with the syndrome of hypothyroidism and called the disorder thyroneural dystrophy. It is quite possible that high central sympathetic nuclear disease may cause certain cases of hyperthyroidism.

DR. WALTER M. KRAUS, New York: The paper of Drs. Wechsler and Savitsky emphasizes the association of visceral and somatic disorders of the nervous system. There are a great many of these combined syndromes. I know, for example, intimately of a case of association of Frölich's syndrome with diplegia and I am sure that Dr. Brock's discussion now and what Dr. Wechsler has said has emphasized sufficiently the frequent association of these two rather different types of disorder, one visceral, the other somatic. I will show three lantern slides to illustrate the anatomy of the region and the difference in the site of origin of the hyperthyroidism and the parkinsonism. These slides show the distinctness and yet the proximity of the hypothalamus and ventral thalamus on the one hand and the globus pallidus on the other. Therefore, it may be assumed, as the authors assume, that their cases illustrate a coincidence of lesions with an identity of cause. A lesion of a single nucleus of the central nervous system never produces two such different groups of symptoms.

DR. GEORGE W. HALL, Chicago: I had the opportunity of reporting a case four or five years ago, in the *Journal of Neurology and Psychopathology*. The patient first had an acute epidemic encephalitis, showing early in the disease behavioristic disturbances, and following this had diabetes insipidus, during which period he passed 31 liters of urine in twenty-four hours, and for which he was treated. The treatment extended over a period of several weeks. He then developed hypopituitarism, during which period he gained 65 pounds (29.5 Kg.). Finally he went into a stage of hyperthyroidism, losing weight rapidly and developing a high basal rate. He was then placed in the hands of a surgeon, who after a short period of preparatory treatment did a thyroidectomy, from which the patient did not recover. I wish to emphasize, in referring to this case, that the patient ran through these different stages of disturbed metabolism. In my opinion, the association of endocrine upsets in connection with epidemic encephalitis is more than coincidental in character. I have observed modified disturbances similar to those in the case which I have just mentioned, which inclines me to believe that there is a definite relation between cause and effect; in other words, that the pathologic changes which are produced in the central nervous system following an attack of epidemic encephalitis are probably a basic factor in the production of hyperthyroidism.

Nurses for Sick Children.—My own private reaction to the psychologic aspect of the nurse's training is that of more value than courses in psychology is practical common sense. Every pediatrician of experience who will confess it will tell you that an untutored nursery maid is frequently more efficient, more sympathetic and more helpful than the most highly educated trained nurse, because of her normal mental adjustments and of her natural aptitude as opposed to an artificial one. Pediatricians reporting to the committee on nursing state that there is an oversupply of poorly prepared, and an undersupply of well prepared, nurses for the care of sick children.—Abt, I. A.: The American Academy of Pediatrics: Its Aim and Its Scope, *Am. J. Dis. Child.* **42**:881 (Oct., pt. 1) 1931.

BRONCHOSCOPY AS AN AID IN THE DIAGNOSIS OF OBSCURE PULMONARY DISORDERS *

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Not so long ago the exploits of the bronchoscopist were heralded in the newspapers chiefly in connection with the dramatic removal of foreign bodies from the air passages. And so persistent has been his reputation along these lines that the public and probably not a few members of the medical profession have remained in ignorance as to the scope of his work and of the relatively rapid developments that have taken place and have brought the art of bronchoscopy where it stands today.

For today, and more especially since the special clinics have been established, it has been proved that the aforementioned "headliners" form only a small proportion of the patients who seek help from the bronchoscopist. In other words, the present trend of the bronchoscopic art is to bring additional help to the internist in the investigation of the larynx, trachea and bronchial tree, and to assist him in diagnosing by means of bronchoscopy and pneumography many of the obscure abnormalities with which he is confronted and in which other physical signs and symptoms have proved to be inadequate. Moreover, the surgeon can often obtain much helpful information from endoscopic examinations. In lung abscess cases, the method of treatment is often dependent on the result of bronchoscopy. If there is abnormal drainage into the bronchi which can be successfully aspirated by suction, and if appropriate treatment can be instituted along bronchoscopic lines, a surgical operation is usually not necessary. On the other hand, if there is a large walled-off cavity with no communication into the bronchi, then surgical intervention is called for. In such cases cooperation between bronchoscopist and surgeon will insure the best results.

In many of the larger cities, outstanding bronchoscopic clinics have been developed which offer the best opportunities for the study of such doubtful cases. Unfortunately there are many patients in various parts of the country who should have the advantages of bronchoscopic examinations but for various reasons can never be sent to distant and highly specialized clinics, and this is just where the treatment in our sanatoriums has been inadequate. Of course, it has been impracticable to send these sick patients on long trips for bronchoscopy, and unless a special clinic is connected with such hospitals these important examinations are never made.

I shall point out in a few words the great opportunities which exist for bronchoscopic investigations in a field which has been greatly neglected.

For several years I have been connected with three sanatoriums in Maryland for the treatment of pulmonary tuberculosis and during this time have become impressed with the vast amount of material available for study. At the State Sanatorium alone, over 1,200 patients are admitted annually, and of this number quite a few show interesting bronchoscopic findings. Over a year ago a bronchoscopic clinic was established at this sanatorium, and the work has been of such practical value that it seems worth while to mention a few of the cases in which a diagnosis was made certain when all other methods of investigation had failed.

It should, however, be stated emphatically that the indiscriminate use of bronchoscopy in frank tuberculous cases is not advocated; as a rule, instrumentation of any kind is liable to do much harm. In chronic cases, however, if there is a question of some unrecognized or complicating condition, the decision may rest largely on the bronchoscopic examination.

In some cases of profuse expectoration from large cavities, suction is of value in removing sputum from the trachea and from the posterior laryngeal wall. The removal may lessen the irritation and cough and help to prevent laryngeal complications. At times, also, endoscopy is necessary in the treatment of subglottic as well as of laryngeal infiltrations and ulcerations where the cautery cannot be satisfactory applied by indirect procedures.

Many patients are sent to the sanatorium with a history of repeated attacks of hemoptysis. In most of these cases tuberculosis is naturally suspected, but on bronchoscopic examination in some of them a local cause can be found for the bleeding and all symptoms can be relieved by endoscopic treatment. Bronchiectasis can frequently be detected, the diagnosis being definitely determined by injecting iodized oil through the bronchoscope. Pneumography is also helpful in outlining lung abscesses, atelectasis, new growths and bronchial stenosis.

A few interesting cases are presented to show some of the advantages of bronchoscopy when employed in conjunction with other methods of diagnosis in certain chest conditions. Only the more important points relating to bronchoscopy will be reported here.

CASE 1.—Miss W., aged 27, a nurse, had been forced to give up her work on account of frequent attacks of coughing up blood. She was admitted to a general hospital for examination, and a very careful study was made of her chest, but no cause for the bleeding could be made out. Finally, she was referred to Dr. Victor Cullen at the Maryland State Sanatorium for consultation in reference to the possibility of an obscure tuberculous lesion. Dr. Cullen could find no evidence of tuberculosis. No tubercle bacilli were ever found in the sputum, but numerous fungi could be made out, and it was felt that a mycotic infection was the cause of her trouble. Considerable blood-stained purulent sputum was brought up at irregular intervals. The patient gave a very definite description of feeling blood trickling down in the region of the bifurcation of the right bronchus; this sensation preceded each attack of coughing.

After all other methods of examination had failed to warrant an exact diagnosis, a resort to bronchoscopy was made. Our object was to find out if a small lung abscess was present, or if a foreign body might be the cause, or if the bleeding was due to a chronic bronchitis or bronchiectasis, ulcer, polyp or some other obscure source of irritation. Bronchoscopic examination revealed a small bleeding area on the mucosa of the right bronchus about 2 cm. below the bifurcation. This spot was cauterized, and the bleeding disappeared entirely for about three weeks. At the end of this time the patient had a recurrence and was referred to Dr. Chevalier Jackson for consultation. Dr. Jackson confirmed my findings and kept her under observation for some time. She had intermittent attacks of bleeding over a period of several weeks, but they have now entirely subsided and she is rapidly recovering in Florida.

Bronchoscopy seems to have been particularly valuable in this case, and certainly the patient was spared the necessity of a long sojourn in a tuberculosis hospital, with its associated stigma.

CASE 2.—L., aged 55, a farmer, had a severe bronchial asthma which developed after the harvesting of his wheat. Over a period of two months his condition had become rapidly worse

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and his breathing greatly embarrassed; at times, indeed, so great was his distress that he had been given morphine, more or less constantly, for relief. Associated with his increasing dyspnea was gradual difficulty in swallowing. He finally came to the sanatorium and Dr. Cullen suspected a new growth in the trachea or esophagus.

Bronchoscopic examination revealed a papillomatous mass in the trachea about 2 cm. above the bifurcation on the left side, almost closing the lumen. This accounted for the dyspnea.

The growth was removed with forceps and the base fulgurated by endothermy. Following this the dyspnea and asthmatic symptoms were entirely relieved and the patient has not had any recurrence over a period of several months. A report of the microscopic examination of the specimen stated that the tissue was of a chronic inflammatory nature and that no cancer cells were found.

However, a paralysis of the left vocal cord has since developed and there is evidence of pressure on the left posterior part of the esophagus in the upper third portion. It is now my feeling that there is a mediastinal growth, doubtless from the primary lesion in the trachea. In all probability the growth will eventually be proved to be malignant in character.

Pressure on the esophagus is so intense that the canal becomes obstructed at times, if too much heavy food is taken, and hence the difficulty in swallowing. For this an occasional esophagoscopy has proved to be very helpful. Since starting treatment the patient has gained 40 pounds (18 Kg.) and at present is doing very nicely.

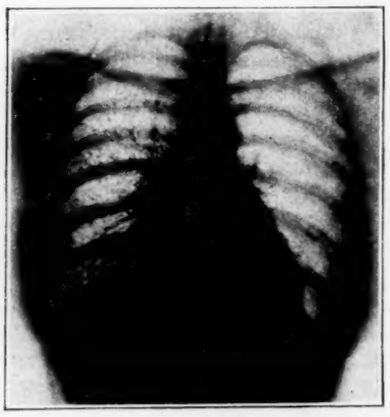

Fig. 1.—Bleeding ulcer, right bronchus.

Fig. 2.—Mediastinal new growth.

Fig. 3.—Extensive bronchiectasis.

CASE 3.—Mrs. S., aged 38, had been suffering with a chronic infection of the accessory sinuses for several years. She had a chronic cough with expectoration of large quantities of exudate, which appeared to be secondary to the sinus infection. The amount of material coughed up increased so greatly in quantity and was of such a foul odor that, fearing tuberculosis, she consulted a specialist.

Examination of the sputum did not show any tubercle bacilli, and physical examination of the chest did not show any tuberculous lesions. Roentgen examination, also, done in the usual manner, did not reveal tuberculosis and gave only slight evidence of bronchiectasis. Through a bronchoscope, iodized oil was injected into the bronchi. Examination by this method outlined many bronchiectatic cavities which could not be shown in the usual manner. The roentgenograms demonstrate the value of this procedure in determining the presence of a bronchiectasis as well as the degree of involvement. This patient has been greatly improved by bronchoscopic treatment.

CASE 4.—C., a man, aged 48, at the time of my first visit was sitting up in bed, suffering from considerable dyspnea and coughing up large quantities of foul smelling sputum. He had been treated by his family physician for bronchial asthma. He came to the hospital, and bronchoscopic examination showed chronic bronchitis with considerable exudate in the bronchi. This was removed by suction, and the improvement in his condition was most marked. After a few treatments the asthma and the attacks of coughing subsided, and the amount of exudate gradually lessened until the patient was free from all symptoms. He has been seen several times during the course of the past two years and has never had the slightest recurrence of his trouble.

This case clearly demonstrates the value of bronchoscopic treatment for such conditions, a result, in my opinion, which could not have been obtained by any other procedures.

CASE 5.—Mrs. N., aged 37, entered the State Sanatorium with a history of having had a severe cough with expectoration, practically all her life. At various times she had had severe hemorrhages, but the sputum had always been negative for tubercle bacilli. Aside from this, her history was unimportant.

Physical examination showed bronchial breathing with increased voice sounds over the left lower lobe of the lung. A few moist râles could be heard. On bronchoscopic inspection there appeared to be a stenosis of the left bronchus. Iodized oil did not enter this part of the lung but clearly outlined the trachea and demonstrated the blocking or stenosis of the left bronchus, with carnification or atelectasis of the left lower lobe of the lung. The trachea was sharply outlined, and the bifurcation of the bronchi was plainly visible. The trachea was pulled slightly to the left, together with the heart and mediastinum. Iodized oil readily entered the right lower bronchi and no pathologic condition was made out on this side. It might be interesting to add that a diagnosis of pulmonary tuberculosis had been made in this case by three different roentgenologists before the patient came to the sanatorium.

CASE 6.—L. N., a man, entered the hospital for suspected tuberculosis. He gave a history of pleurisy in 1926, pneumonia in 1927 and hemoptysis at times since 1923. The temperature had usually been normal and there had been no elevation of the pulse rate. Every three or four days he was having periods of profuse expectoration which had a very foul odor. On physical examination the right lung appeared to be perfectly normal; on the left side there was impairment over the entire lung with a few scattered moist râles from apex to base. There was suppressed breathing over this entire side. Roentgen observations following the injection of iodized oil showed a normal right lung. The upper lobe of the left lung showed a pleurisy, extending from the apex to the third rib, and obliteration of the costophrenic angle at the left base, also pleuritic in origin, with a mild degree of bronchiectasis or dilatation of the bronchi, extending from the third to the seventh rib. This patient was treated several times through the bronchoscope and showed rapid improvement. The odor virtually disappeared; cough and expectoration were also much lessened. He has gained in weight and his general condition has been greatly improved.

CASE 7.—Mrs. M., aged 38, presented a very interesting chest condition. Physical examination showed consolidation of the lower lobe of the right lung, which was confirmed by roentgenograms. All other parts of the lungs appeared to be normal. There was no fever at any time; there were no night sweats, and no tubercle bacilli were ever found in the sputum. Clinically

the case did not appear to be tuberculous but strongly suggested a new growth.

A bronchoscopic examination did not reveal any exudate or any suggestion of a new growth in the bronchi. The bronchus leading to the right lower lobe appeared compressed, very little air seemed to be coming out, and iodized oil would not enter this bronchus. It seemed probable that there was a consolidation of the lower lobe, nonpurulent in character.

As a new growth was still suspected, a thoracotomy was performed and a small section of tissue was taken for examination. Surprisingly there was no evidence of a malignant condition; the growth was tuberculous in character, an unusual case in view of the clinical picture.

The next two cases demonstrate the importance of bronchoscopy in cases of lung abscess. The first case was one in which surgical intervention was clearly indicated, while in the second there were multiple abscesses, communicating with the bronchi. This case was clearly one for bronchoscopic treatment.

CASE 8.—F., a man, aged 26, was referred to the Bronchoscopic Clinic at the University Hospital for treatment of a lung abscess of the right lower lobe. He improved under bronchoscopic treatment, but iodized oil would never enter very far into the bronchus on the right side, and as there was an extensive, uniform area of involvement, it was decided that the best results could be obtained by a thoracotomy and external drainage. Under this procedure the patient made an uneventful recovery.

CASE 9.—The other patient, Mrs. L., aged 42, was bringing up a great amount of purulent exudate. This condition had been present over a period of several months and was getting worse. No positive diagnosis could be made by the usual means. Four possibilities were considered: (1) lung abscess; (2) bronchiectasis; (3) an old pleurisy with drainage into a bronchus, and (4) chronic tuberculosis with extensive cavitation.

Through the bronchoscope several ounces of purulent material were aspirated by suction, and iodized oil was injected. A roentgenogram, made after this, showed numerous multiple abscess cavities which had not been revealed by the roentgenogram made before the injection. This case was certainly one for bronchoscopic treatment, and surgery was definitely contraindicated.

Fig. 4.—Localized lung abscess.

Fig. 5.—Multiple lung abscess cavities.

CASE 10.—W., a man, aged 33, was sent into the hospital in order that the cause of a consolidation in the lower part of the left lung might be determined. His temperature had been between 100 and 101 F. for several weeks, but no exact diagnosis could be made of his chest condition. Tuberculosis was considered, but no organisms could be found. There was considerable expectoration. It was a question whether the condition was a lung abscess, a bronchiectasis or an unresolved pneumonia. Pneumography did not reveal any bronchiectasis or lung abscess, but the bronchi were partially occluded. In view of the clinical picture, a diagnosis of unresolved pneumonia was made.

CASE 11.—Mrs. S., aged 45, was sent into the State Sanatorium for treatment of pulmonary tuberculosis. She expectorated great amounts of purulent discharge, but no tubercle bacilli were found in the sputum. She did not have a fever, and no physical signs of tuberculosis were made out. Roentgenograms did not reveal any significant changes in the lungs or bronchi.

A bronchoscopic examination was made, and it was noted that the bronchi were filled with exudate. After aspiration, iodized oil was injected, and numerous large bronchiectatic cavities could be demonstrated by means of roentgenograms.

The patient has improved greatly under bronchoscopic treatment. At present she brings up very little exudate; she has gained in weight, her skin is clearer and she feels much better in every way.

CASE 12.—L. M., a girl, aged 6 months, was admitted to Provident Hospital, for intermittent cough and dyspnea. There was a history of attacks of coughing with difficulty in breathing during the past three weeks. Three days previously the coughing became more severe and occurred at more frequent intervals, associated with more marked dyspnea. There had been no vomiting or other gastro-intestinal symptoms. The temperature had not been elevated. The past history and the family history were irrelevant.

On examination in bed the child was seen to be well nourished and developed. She was apparently having some respiratory difficulty associated with a dry croupy cough. Examination of the eyes, ears, nose and mouth gave negative results. The child was having marked inspiratory and expiratory difficulty, as shown by retraction of the abdominal muscles and of the muscles of the neck. On percussion there was marked dulness at the left upper border from the left apex to the fourth rib anteriorly. Auscultation revealed marked suppression of breath sounds all over the left side of the chest, especially over the area of dulness both anteriorly and posteriorly. Breath sounds on the right were exaggerated. Scattered musical râles were heard in both lungs. Examination of the pharynx was negative. Wheezing respirations were heard at the mouth.

The patient had been referred to the Bronchoscopic Clinic at the University Hospital for examination, as a foreign body was suspected. Bronchoscopy did not show any foreign body, and a diagnosis of bronchopneumonia was made.

The patient stayed in the hospital for twenty days, during which time she had a temperature of 97.2 F. The pulse varied between 135 and 85, and respirations between 58 and 22. The weight increased from 13 pounds 8 ounces (6 Kg.) to 14 pounds 15 ounces (7 Kg.). All symptoms gradually subsided and the patient was discharged much improved.

CASE 13.—M. D., a white girl, aged 17 months, admitted to the infants' ward in the Children's Hospital at Eudowood Sanatorium, Sept. 28, 1930, was sent to the hospital on account of dyspnea and wheezing. Her father was affected with tuberculosis, and the child had been definitely exposed. Following a cold in August, some difficulty in breathing had developed, with wheezing. A roentgenogram of the chest at that time suggested that there was some enlargement of the glands pressing on the trachea, which was thought to be tuberculous. Cultures taken from the throat did not reveal any evidence of diphtheria. The child was then sent to Eudowood.

After examination it was decided that there must be some other cause for the dyspnea, and a bronchoscopic examination was requested. The child was then referred to the Bronchoscopic Clinic at the University Hospital and on examination no definite obstruction in the trachea or evidence of pressure from without on the bronchi could be made out. However, there was a collection of dirty brownish mucus in the right bronchus. This was aspirated, and the dyspnea was immediately relieved. After this the patient gradually improved until all the symptoms had entirely subsided.

CASE 14.—W. M. was admitted to the sanatorium for treatment of tuberculosis. His temperature was usually normal. Frequently he expectorated large quantities of foul smelling sputum. No tubercle bacilli could be found. Bronchoscopic examination was requested, and considerable exudate was found in the bronchi. This was aspirated, and iodized oil was injected, which demonstrated extensive bronchiectasis.

SUMMARY

The practical use of bronchoscopy as an aid to the diagnosis and treatment of diseases of the chest is increasing in favor. In many cases a final diagnosis can be made only through the help of endoscopy after all other means of investigation have failed. A well equipped central clinic unquestionably affords the best opportunity for the study of such cases, but for various reasons many deserving patients never reach such a clinic. It is apparent, therefore, that there is a fertile field for investigation for the bronchoscopist in hospitals for the treatment of pulmonary diseases.

It is earnestly hoped that the time will soon come when the management of all hospitals for the treatment of tuberculosis will insist on the establishment of a bronchoscopic clinic as an important department in such institutions.

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ABSTRACT OF DISCUSSION

DR. WILLIAM F. MOORE, Philadelphia: As Dr. Looper has pointed out, sanatoriums for the care of tuberculous persons have taken a large number of patients that could be benefited by bronchoscopy as a means of both diagnosis and treatment. Only a comparatively few years ago, when one thought of bronchoscopy it was only in terms of foreign bodies. That is now changed and laryngologists are thinking more of treating some local suppuration, and patients are coming in for diagnostic bronchoscopy entirely apart from foreign body work. Dr. Looper expresses the belief that bronchoscopic clinics can be established and will be established in connection with these institutions. I think the point is well taken. We have had occasion to see the necessity for this sort of thing at the Bronchoscopic Clinic in Philadelphia, where we see patients from the tuberculosis ward, both men and women, at the Philadelphia General Hospital. In going over the records I find that a large majority of patients that come for treatment of pulmonary suppuration have come either directly or indirectly through these wards or have been treated in other institutions. When one considers that it is necessary at the present time, although men are being trained for this work and bronchoscopic clinics are being established, for people to come long distances for their treatment, and when one also remembers that they should be treated at least at intervals of seven or eight days, it is evident that if the bronchoscopic clinics were already at hand in these institutions it would be of great benefit to the patients. I want to add that if these bronchoscopic clinics are established they should be established in such a way that they can get the help of the roentgenologist and, of course, the internist. At the Philadelphia Hospital, for instance, we had the choice of location when the new hospital was built, and it was considered important to have the bronchoscopic clinic in close relation to the x-ray department. For that reason it was put on the same floor and just across the hall. We frequently had to take patients from one floor to another, and after the instillation of iodized oil, time is a big factor in the end-result. The patient will cough, but if he can be taken from one clinic to another in a relatively short time the results will probably be better.

DR. R. M. LUKENS, Philadelphia: Bronchoscopy for foreign bodies, while spectacular, has been forced steadily to the background by bronchoscopy for obscure medical diseases. In a clinic in which fifty patients are treated weekly, it is probable that only a small proportion would be for foreign bodies. Physicians are rapidly realizing the value of bronchoscopy as a diagnostic measure and are using the established bronchoscopic clinics more and more. About nine years ago, Dr. Chevalier Jackson came to the conclusion that the field of bronchoscopy was not limited to foreign body work but could be used not only in suppurative diseases of the lung but also as a diagnostic measure in lung diseases of obscure origin. At that time he established a bronchoscopic clinic in the department for diseases in the Jefferson Hospital. The purpose of this clinic was to develop bronchoscopy along diagnostic and medical lines. He felt that any hospital or department in any hospital devoted to diseases of the lung should have a bronchoscopic clinic, and the history of bronchoscopy shows that he was right. Dr. Looper's report of cases shows the value of bronchoscopy as an aid to the internist and thoracic surgeon, and our experience at the Jefferson Hospital has been very similar to that of Dr. Looper. In the early days of the clinic, we received for bronchoscopic examination many cases which had been diagnosed tuberculosis in which tubercle bacilli were absent in the sputum, the main symptoms being cough, loss of weight, pulmonary bleeding, night sweats, and signs of pulmonary disease. Many of these cases proved to be nontuberculous according to the bronchoscopic observations, while in other cases the diagnosis of pulmonary tuberculosis was confirmed by finding tubercle bacilli which had not been found in the sputum. In one case in which the symptoms were not marked, the main symptom being blood-streaked, scanty sputum, which occurred at intervals without bacilli, bronchoscopic examination revealed a shallow ulceration in the left stem bronchus, which bled rapidly on being touched. A swab smear from this ulcer revealed numerous tubercle bacilli. Many cases could be cited in which small growths, stenosis, erosion of peribronchial lymph nodes into the bronchi, hemorrhagic points, compression and some nonopaque foreign bodies had been found in cases diagnosed tuberculosis over long periods of time. Bronchoscopy for diagnosis and as an aid to medical treatment is without danger when properly performed by qualified bronchoscopists. However, slight as are the risks of bronchoscopy, they can be kept at this low level only if definite, efficient bronchoscopic clinics are maintained.

DR. CHEVALIER JACKSON, Philadelphia: I think that all the bronchoscopic clinics in Philadelphia are heartily in accord with the conclusions of Dr. Looper, based on his interesting series of cases. Corroborating his point in regard to the number of foreign bodies dealt with compared with the number of cases in which the bronchoscope is used for diagnosis and treatment of disease, I should like to add that at the end of our last course, in going over the two weeks' work in the five bronchoscopic clinics, I found that in 310 endoscopies 7 were for foreign bodies—close to 2 per cent. In other words, only 2 per cent of the endoscopies we do are devoted to foreign body problems. I am often asked in a particular case, Would you advise bronchoscopy? When I am asked that question I feel as I think a gynecologist would feel if he were asked if in a given case he would use a vaginal speculum. To me a bronchoscope is a speculum for looking into the inside of the chest —after the internist has examined the outside and the roentgenologist has looked through. In regard to tuberculosis, we have had quite a number of cases in which the sputum has been negative over and over again in many different clinics. The patient finally comes to us with a diagnostic problem; we do a bronchoscopy; we aspirate the bronchi clean of secretion, and then we watch for a little bit of secretion coming out of some particular bronchial orifice; we get that little bit of secretion; and over and over again we have been able to find tubercle bacilli which were possibly present, but overlooked, in the gross specimen previously sent to the laboratory. I should like to emphasize two things: One should make one's technic as smooth and gentle as possible—not an ordeal for the patient. This is necessary to maintain the support of the internists. The other point is that one ought to emphasize everywhere that bronchoscopy is not a substitute for any other method of either diagnosis or treatment, outside of foreign body work. It is not a substitute, it is an addition to the other means, medical and surgical, for the diagnosis and treatment of pulmonary disease.

DR. MURDOCK EQUEN, Atlanta, Ga.: I should like to mention two cases in which a foreign body was superimposed on a supposedly medical condition. A boy, aged 9 years, was

admitted to the Emory University Hospital for bronchoscopic treatment. Four months previously he had aspirated a molar tooth. This had been followed by bronchopneumonia in the left base. The pneumonia was improved but was succeeded by a cough with a moderate amount of purulent sputum. His condition continued to grow worse. In a roentgenogram of the lungs, the tooth was discovered in the midportion of the left lung between the third rib anteriorly and the eighth rib posteriorly. There was complete atelectasis of the lower lobe. On bronchoscopic examination, the entire left bronchus appeared filled with secretions and granulation tissue. The removal of the secretions by suction and of the granulations by forceps was followed by profuse hemorrhage. The bleeding was controlled by the application of epinephrine and silver nitrate. As the child's general condition seemed extremely poor and cyanosis was marked, I decided to discontinue the examination and placed the patient in the oxygen tent. A transfusion of 200 cc. of whole blood was given several days later. Two weeks after admission, bronchoscopy was again performed and the tooth removed. On discharge, twenty-three days after admission, the left lung was practically clear and the patient left the hospital. The other patient was a boy, aged 6, admitted to the Grady Hospital with a positive Widal reaction and other clinical evidence of typhoid. A roentgenogram of the chest revealed the presence of a tack in the left main bronchus. A careful history failed to elicit the aspiration of a foreign body. Three days following the removal of the tack the Widal reaction was negative, the temperature was normal and the child was dismissed from the hospital.

INFANTILE ECZEMA

A STUDY BASED ON ONE HUNDRED AND SIXTY CASES *

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The material for this study was drawn from the children's allergy clinics of Washington University School of Medicine (St. Louis) and the University of California Medical School (San Francisco).[1] While attention was especially directed toward the rôle of allergy, other factors were not overlooked. The infants were studied on repeated visits to the clinics and the following data obtained: name, age, sex, race or color, family history, age at onset, age when first seen, skin test reactions, with response on subsequent visits, the nature of the allergens found positive and the relation to clinical manifestations. In addition the rôle of season, the effect of increasing age, the presence of infections and the response to therapy were noted. While conclusions may be difficult to draw in all instances, an attempt will be made to discuss the various observations.

Of a total of 160 patients ranging from 3 weeks to 4 years of age, 83 were studied in St. Louis and 77 in San Francisco. While no attempt was made to exclude any patients, the number seen in each locality during the study was very close to 50 per cent of the total. From this fact it is easier to contrast the effect of difference in climate, race preponderance and the like.

TABLE 1.—*Classification of One Hundred and Sixty Patients in St. Louis and San Francisco*

	Patients
Washington University School of Medicine (St. Louis)	83
University of California Medical School (San Francisco)	77
Total	160

Sex	Number	Per Cent
Male	97	60
Female	63	40
Race		
White	142	88
Negro	13	8
Yellow	5	4

There were ninety-seven males (60 per cent) and sixty-three females (40 per cent) with approximately the same percentages in both the St. Louis and the San Francisco groups. It is interesting to note that this slightly greater preponderance in the male was also seen in O'Keefe and Rackemann's [2] series (140 in 239 patients, or 59 per cent).

One hundred and forty-two or 88 per cent, of the patients belonged to the white race, thirteen, or 8 per cent, were Negroes, and five, or 4 per cent, of the patients were yellow. Needless to say, the Negro patients were confined to the St. Louis group while the orientals appeared only in San Francisco. No striking differences were found in the three race groups. The incidence of Negro and oriental patients is about what would be expected from the respective clinic groups. They are noted here only because the literature seldom mentions racial incidence.

A history of allergy of some form was given in the family history of ninety-two patients (57.5 per cent); while in sixty-five cases (40.5 per cent) the existence of a familial trend was absent and the history was not obtainable in 3 (2 per cent) of the cases. This is a considerably higher percentage with positive family histories than O'Keefe and Rackemann [2] found in their series. We believe, however, that the incidence is probably even higher. Experience leads us to keep the records open to correction since with frequent contact the parents may reverse a previous denial of familial allergy. This is partly due to their earlier failure to understand the question and partly due to increased interest in the study for themselves. Of the group giving a positive family history, seventeen had manifestations of allergy in the immediate family and the same generation, forty-seven in the preceding generation, while twenty-eight "blamed" the second preceding generation or cousins, aunts or uncles.

With regard to the age of onset, our figures are in close harmony with those of O'Keefe and Rackemann.[2] There were 105 patients, or 65 per cent, who had onset of symptoms before the sixth month, 23, or 14 per cent, between the sixth and the twelfth month, and the same percentage held for the group from the twelfth to the twenty-fourth month, while only 7 per cent had symptoms starting after the twenty-fourth month. The average age for onset of symptoms was 2 months.

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* Read before the Section on Diseases of Children at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

* The authors were assisted by Miss Frances Stern of Boston and her associates, who contributed innumerable wheat and egg free recipes as substitutes for pastes, so important in the diets of Italian patients. Assistance also was rendered by Miss Bernadette J. Shane, research assistant in allergy, Hooper Foundation for Medical Research, University of California.

1. Previous studies in allergy include:
Smyth, F. S.: The Toxic Fraction in Certain Eczema Serums, J. Allergy **2**: 173 (March) 1931.
Smyth, F. S., and Bain, Katherine M.: A Study of the Allergic Skin-Test Substance, ibid. **2**: 177 (March) 1931.
Studies in Passive Transfer, ibid. **2**: 181 (March) 1931.
The Direct Skin Test in Allergy, ibid. **2**: 316 (July) 1931.
Enteral Absorption of the Antigen and the Apparent Failure of Antigen Secretion in Human Milk, ibid. **2**: 282 (May) 1931.

2. O'Keefe, E. S., and Rackemann, F. M.: Studies in Asthma, J. A. M. A. **92**: 883 (March 16) 1929.

Colic, enterospasm or abdominal allergy, as mentioned by White [3] and Rowe,[4] was a frequent complaint. Its significance, however, was not always clear since causes other than allergy were often to be suspected. In the St. Louis group, twenty patients had colic as a striking complaint. But it was our observation that this complaint, even when related to the allergic reactions, does not necessarily precede the skin manifestations, as White [3] indicates. Certain carefully observed patients have had concomitant skin and abdominal complaints, while others have shown abdominal distress after the

TABLE 2.—*Family History and Age of Onset of Disease*

Positive					92 (57.5%)
Family History	I (Same generation)	17			
	II (Preceding generation)	47			
	III (Second generation)	28			
Denied					65 (40.5%)
Not obtained					3 (2%)
		Age at Onset			
		0 to 6 Months	6 to 12 Months	12 to 24 Months	24+ Months
Number		105	23	23	9

eczema had cleared. One patient had eczema and then asthma definitely related to food sensitivity. At 4 years of age this patient has typical abdominal cramps and diarrhea when the forbidden foods are surreptitiously obtained.

ALLERGEN TESTS

The tests were made by both the cutaneous and the intracutaneous method, though the latter was used only after the first had been negative or doubtful. A more complete discussion of the tests has been given elsewhere.[5] Positive tests were given by 112 patients, or 74 per cent. This finding, however, needs further analysis since 20 of them when first tested as infants under 4 months of age were negative, becoming positive with increasing age. The youngest patient to give a definite positive skin test was 11 weeks of age and, we believe, is quite an exception. As a general rule we found that tests were usually negative before the fourth month. Twelve of the patients who developed positive tests with increasing age were under close hospital study. We have watched the skin test develop through faint positive to very strongly positive and, we believe, have controlled such factors as feeding, with the conclusion that the increasing age is probably the most important factor.

A strong analogy exists in the development of agglutinin, hemolysin and precipitin formation which increases with advancing age. From the previous data on age onset, it would seem that the skin test is not necessarily coincidental with the clinical symptoms nor necessarily, as will be discussed later, related to exposure to the allergen

The same analysis of the 48 patients (38 per cent) with negative skin tests is necessary. Eight, or 5 per cent of the total, were tested when under 4 months of age and were either not seen again or are still under observation. There were twenty-two patients over 2 years of age, who, we believe, presented another problem with the following possibilities:

1. Loss of cutaneous skin test which was earlier positive.

2. Incapable of forming skin test and neither earlier nor later developing the reactions.

3. Nonallergic dermatitis, i. e., related to physical agents, cold, trauma, and infection.

Later discussion may clarify part of these suggested possibilities.

ALLERGEN FREQUENCY

The foods were by all odds the most frequent allergens giving positive tests. Only two in the entire series reacted to inhalants without concomitant positive food tests. In the order of frequency, our food allergens paralleled those reported by O'Keefe and Rackemann.[2]

The frequency with which the food allergens were positive is given in table 3.

The preponderance of positive tests in the latter part of the first year has led previous investigators [6] to suggest that the infants become sensitive when these foods are eaten. We would like, however, to suggest that this is not an entirely satisfactory explanation. Egg white, which in order of frequency in positive tests stands first, is nowhere near so frequent and early a part of the infant's dietary as cow's milk, which stands third. In fact, it is the custom in many clinics to use the yolk if egg is to be given the infant. This is usually started about the eighth month, when it is given hard-boiled and crushed with a fork. Such a preparation usually separates the white, which has relatively much less food value.

There must then be some other factor to account for the frequency with which egg-white is found on skin tests in infants before egg is usually included in the diet. As indicated elsewhere,[5] the transmission through breast milk, which is open to dispute, fails to account for the evidence of sensitization in those infants who were never breast fed. Placental transmission is more likely but still does not account for its position as prime offender. While perhaps it is entirely hypothetic, we would suggest that an answer may be found in the newer knowledge of the gross protein molecules. Here

TABLE 3.—*Allergen Frequency in Positive Reactors*

Allergen Tests			
Positive	112	Negative	48
Allergen Frequency in Positive Reactors			
Foods		**Inhalants**	
Egg-white	68	Pollens	6
Wheat	44	Feathers	5
Milk	32	Wool	1
Orange	12	Horse dander	1
Oats	11	Orris root	1
Potato	9		
Corn	6		
Peas	4		
String beans	4		
Rice	3		
Barley	3		

we find that the molecular weight of egg albumin is the common denominator of all protein molecules. In other words, other proteins are multiples of egg albumin. It may be possible that further sensitization depends on combinations or arrangements which follow some law of multiples or factors of digestive change.

With regard to the response to tests with inhalant allergens, a total of fourteen reactors was found. With two exceptions (one infant, aged 14 months, reacting to wool and one child, aged 4 years, reacting to pollens), they all had simultaneous reactions to food allergens.

3. White, P. J.: Relation Between Colic and Eczema in Early Infancy, Am. J. Dis. Child. **38**: 935 (Nov.) 1929.

4. Rowe, A. H.: Food Allergy, J. A. M. A. **91**: 1623 (Nov. 24) 1928.

5. Smyth and Bain (footnote 1, fourth and fifth references).

6. O'Keefe and Rackemann (footnote 2). Stuart, H. C., and Farnham, Marynia: Acquisition and Loss of Hypersensitiveness in Early Life, Am. J. Dis. Child. **32**: 341 (Sept.) 1926.

Six of this group reacted to pollens, the youngest being 15 months of age. Five of the group reacted to feathers, the youngest being 5½ months of age. The inhalant reactors were evenly distributed between the San Francisco and the St. Louis clinics.

PHYSICAL AGENTS

Considerable attention has been called of late to spectacular instances of abnormal response to cold, light, heat, and the like.[7] For the most part, these have been older individuals and no attempt has been made to evaluate the rôle of physical agents in a large group of younger individuals. Yet we believe that they may play a very important part.

In the St. Louis group, the great majority of our patients had manifestations chiefly in the winter time. Such factors as clothing, infection, household inhalants and changes in the infant's diet and the feeding of cows supplying the milk still left unsolved this seasonal preponderance. A definite story of aggravation after trial exposure to cold was given by nineteen of the patients. Eight of these gave negative skin tests which cleared up with the return of warm weather. One of them had an urticarial response to cold.

On the other hand, some of the patients seemed manifestly worse in sudden warm weather. In two instances this might have been due to the increased pollen content of the air. In another with urticaria from sunlight, the light rather than the heat seemed responsible. In San Francisco there is not so marked a seasonal variation but the frequent history of aggravation with fog. The latter, however, is accompanied by marked temperature change and hence may be considered in a similar category with seasonal change.

In general, with regard to the rôle of light, heat and cold, it would appear that sudden contrast or change is the stimulus rather than the element itself. In patients aggravated by cold, the house temperature is usually in sharp contrast with that outside and the prurigo or other condition is manifest when the patient returns to the warm dry house with this sudden contrast to the outside temperature. Until 6 or 8 weeks of age, the majority of infants are kept with rather constant temperature and humidity. At this time exposure which is too sudden will affect the majority of all infants.

The rôle of trauma is somewhat similar. As shown elsewhere, the response to simple scratch of the skin is usually more intense, the younger the infant. While far from proved, it is quite possible that injury to the skin will itself liberate an agent which provokes further irritation. A vicious circle is thus established which seems borne out clinically; i. e. (epigrammatically) they scratch because they itch and they itch because they scratch. Some such explanation may apply to most of the external agents, clothing, cold, heat, light, and possibly to infection as well. Certainly the effect of salves and measures preventing scratching would indicate its plausibility.

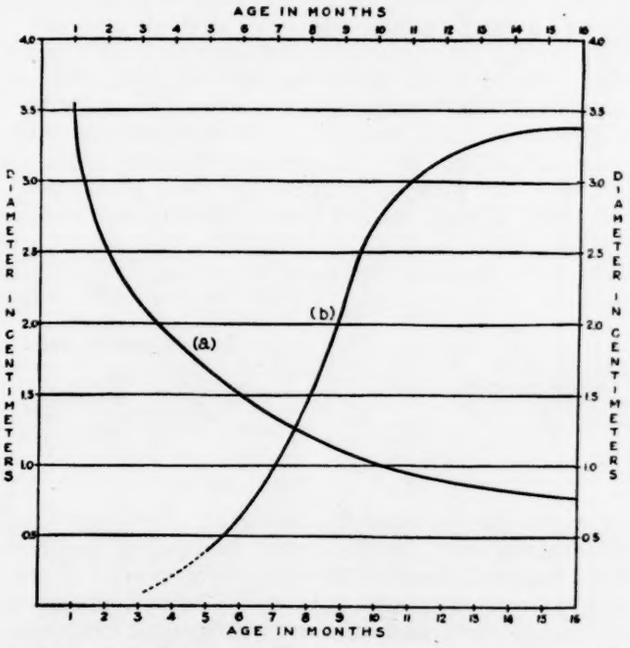
Definite evidence was presented by seven patients that skin infection produced the eczematous response. In two of these, allergen skin tests were positive so that both factors required attention. Of the other five, three had intertrigo and two had phytosis, the treatment of which solved the entire situation. We believe that in addition to the possibility of sensitization to bacterial or yeast bodies and in addition to the increased permeability of the skin (with possibly greater response to contact allergens) infection of the skin may behave similarly to trauma producing a secondary irritating substance.

7. Duke, W. W.: Heat and Effort Sensitiveness: Cold Sensitiveness, Arch. Int. Med. **45**: 206 (Feb.) 1930. Horton, B. T., and Brown, G. E.: Am. J. M. Sc. **178**: 191 (Aug.) 1922. Alexander, H. L.: J. Allergy **2**: 164 (March) 1931.

RESULTS OF TREATMENT

From what has been stated before, it is obvious that conclusions with regard to treatment are difficult. Since there seems to be a natural lessening of response to traumatic agents, including heat, light and infection, with increasing age, it is hard to know in all cases how much value may be attached to measures of therapy. Again it is quite necessary, in order to hold the patients, to use any and all forms of therapy. Although we endeavored to avoid confusion in treatment, this was not always possible.

Before discussing the results of dietotherapy, it would be well to outline briefly the principles guiding



Skin reactivity (diameter given in centimeters): curve *a*, nonallergic irritation; curve *b*, specific allergen tests.

our diet supervision. These principles are not new but have been stressed by most pediatricians dealing with eczema:

1. Prolonged cooking often reduces the ill effects of foods. For example, raw apple may give trouble, cooked apple sauce may not do so. Evaporating or drying processes of milk may likewise alter the offending fraction. When both the lactalbumin and casein fractions of milk are at fault, milk boiled for four hours or preparations altered by evaporation or drying are used. In a typical case under study the patient was kept for one year on dried milk, following which four hour boiled milk was gradually substituted. As the result of slowly reducing the length of time for boiling the milk, the infant was gradually able to take cow's milk boiled only ten minutes, though she is still unable to take raw milk, junket or other preparations of uncooked milk.

2. A second guiding principle is the substitution of goat's milk, especially when there seems to be a sensitization to the lactalbumin of cow's milk but not to the casein. We feel, however, that for many reasons (sterility, uniformity and the question of anemia) evaporated goat's milk (Alpure brand) is preferable to the fresh product.

Regarding the new preparation of Hill and Stuart,[8] i. e., Sobee, we have had some satisfactory results but find that some infants, apparently because of sensitivity to barley, are unable to take it and infants with skin tests to barley may not do well.

3. Since wheat is the most common offending cereal, substitutes are used. Rice in any of its various forms is perhaps the most generally acceptable. Rye-crisp has been found of great value as a substitute for bread and crackers. Oats and potatoes may at times be used though, of course, these are more frequent offenders than rice or rye.

4. Of the fruits, orange and apple are particular offenders. In the vegetables, peas, beans, tomatoes, spinach and potatoes are encountered.

In many instances there seems to be a tolerance for small amounts while larger portions of food would give trouble. In the matter of feeding some of those able to take a little milk, gelatin has been added. By this combination the protein requirement may be nearer complete, gelatin never having proved offensive. Those patients with persistent negative tests were none the less suspected of food sensitivity. A diet was instituted composed of the least frequently offending foods as judged by the allergen frequency of those giving positive tests. Finally, we feel that a successful diet should allow all the expected requirements. Patients have come under our direction who, because of negative tests, had been placed on sweeping restriction of all animal protein. One such patient, we believe, presented nutritional edema and in four days' time lost considerable weight when evaporated milk was given for the first time in eight months. Other suggestive nutritional disturbances might be cited but are not within the scope of this paper. It does seem logical, however, that, to be successful, the diet itself should guarantee normal nutrition.

TABLE 4.—*Results of Dietotherapy*

	Test Positive	Negative	Total
Complete relief	32	15	47
Decided improvement	15	3	18
Slight improvement	8	3	11
Of no value	2	18	20
			96

The question will be raised as to the value of graded administration of the offending antigens. In six cases egg-white was administered. In two of these, capsules of powdered egg-white were used; in four, dilute egg-white solution. Two of the six so treated were able to include egg in the diet, but one of these after an interval of one week without egg reverted to his previous intolerance. All the others had such a stormy course during treatment that it was abandoned. Hence we have felt that eradication is a safer measure for most clinic patients than graded administration for tolerance.

A total of forty-seven patients (approximately 30 per cent) had a spectacular relief by dietotherapy alone. Of these, thirty-two were from the test-positive group, and fifteen from the group with negative skin tests. In eighteen patients the diet was decidedly a factor, fifteen giving skin test reactions and three not doing so. In thirteen the diet helped but the effect was not so clear-cut. The diet was of no value in twenty patients. Four patients tolerated evaporated goat's milk much better than any other milk. Three of these reacted to cow's milk lactalbumin and one of them failed to give positive tests. Sobee was given to eight patients and five did well; but two of them reacted to barley and fared poorly on Sobee, and one did not do well for no plausible reason. Six patients were exclusively breast fed. Diet supervision of the mother seemed to help in two of these infants. In another infant artificial feeding seemed more successful, though we do not advocate this as the treatment of choice.

8. Hill, L. W., and Stuart, H. C.: A Soy Bean Food Preparation for Feeding Infants with Milk Idiosynerasy, J. A. M. A. **93**: 985 (Sept. 28) 1929.

ASTHMA

Respiratory symptoms developed in a total of twenty-three patients (San Francisco twelve and St. Louis eleven). The youngest was 5 months of age and, as mentioned before, gave skin reactions to feathers. In two patients pollen treatments proved of value for the respiratory symptoms of hay-fever and for the simultaneous eczema as well. Two patients died while under observation, both deaths being sudden. One on autopsy presented nothing beyond an enlarged thymus, though, with a healthy state of nutrition and development, this cannot be assumed as the causal factor any more than anaphylaxis. The other patient died suddenly two hours after diphtheria antitoxin. Skin tests, including horse dander and serum, as well as foods, had been negative. The patient, however, was definitely clinically sensitive to egg, wheat and orange.

Factors such as dehydration, weight disturbances and acid therapy have been under observation and may be reported later. At the present time no definite conclusions have warranted discussing them here.

SUMMARY AND CONCLUSIONS

Eczema is the response of the skin to irritation. The source of that irritation may be single or multiple, related to local infection, to cold or heat, or to intolerance of an allergic nature. The allergen frequency is not entirely explained by contact but probably on some immunochemical mechanism. While skin tests are often of great value, they rarely develop before the fourth month and may be lacking entirely. In other words, the capacity to form skin tests and the clinical reactivity are independent variables but frequently related. The skin of infants is particularly susceptible to trauma and to sudden changes of temperature. Such injury may itself establish a vicious circle. With increasing age this may entirely disappear. In other instances allergy must be considered as an additional factor. One hundred and sixty patients are surveyed with regard to the various factors. In treatment the diet must not be so restricted as to prevent normal nutrition, since sweeping restrictions may be dangerous.

ABSTRACT OF DISCUSSION

DR. JOHN AITKMAN, Rochester, N. Y.: I am sure all feel that the old term "eczema" is unsatisfactory and that it probably covers a number of conditions not now understood. As time goes on these will be explained and better names applied. The etiology in many cases is obscure and the problems of eczema are not all yet solved. However, Dr. Smyth has shown that by careful study a large group of allergic persons may be separated out and given special beneficial dietetic treatment. He does not say that allergy will explain all eczema, but that it is most valuable in a large number of cases. Following the earlier reports of Blackfan, Schloss and others, many were disappointed in the results they were able to obtain with skin tests, especially in eczematous children on an exclusive milk diet, but who gave negative tests for milk. I am glad that the doctor has pointed out the cause of the failures and especially that children under

4 months of age give negative skin tests. Success in the treatment of eczema in private practice presents some special features. Skin troubles are embarrassing. A small area of eczema which can be seen may cause as much worry to the parents and friends as a heart lesion. The child with eczema is not as a rule seriously ill. Fortunately, as the child passes the first year there is a tendency to recover. This should be pointed out to the parents; also that, though much of the eczema may clear up, small areas of irritation may remain until the diet becomes more general. Many parents object to the expense, annoyance and pain of numerous skin tests, especially to repeated tests. Fortunately, many cases belong in the group of irritative eczemas that appear first on the exposed parts of the body. Good results may usually be obtained by fairly simple local treatment. The cooperation of a dermatologist is of great value. If these cases do not clear up, skin tests should be made. Dr. Smyth has spoken of the importance of keeping up the child's general condition. I hesitate to remove a baby from breast milk or substitutes when it is in good condition except for the annoyance of the skin rash. After changes to substitutes, I have sometimes been disappointed to find that the child has developed diarrhea or other evidences of indigestion. I should like to ask the doctor how many of the children with allergic conditions have shown asthma later, and how soon after the disappearance of the eczema the asthma has developed.

DR. BRET RATNER, New York: I should like to say a word about the persons who react to foods of which they have never partaken. I have for several years been interested in the question of congenital protein hypersensitiveness and have shown by animal experimentation that the fetus can become sensitized in utero. I then showed that the human being also can become sensitized in utero, and it seems to me that in certain of the cases Dr. Smyth presented the patient became sensitized in this manner.

DR. C. U. MOORE, Portland, Ore.: I should like to ask Dr. Smyth the average number of food tests made and what the maximum was on any one of these children.

DR. FRANCIS SCOTT SMYTH, San Francisco: With regard to the question about the number developing respiratory symptoms, it would be guessing as yet to make a final statement, though twenty I thought very definitely were developing respiratory allergy under observation. With regard to the tests, the question asked by Dr. Moore, the maximum I put on is about 72 and the average about 40. It has taken a great deal of time in getting them all, and of course that is open to some criticism since one cannot get them all on at the same time. With regard to Dr. Ratner's discussion, I was anxious to hear his interpretation and I have had, since following his work, a similar instance of the mother's diet during pregnancy apparently affecting the sensitization. I cautiously avoided the discussion because I am firmly convinced that placental transmission is more likely a source of sensitization, and I think curve *b* rather speaks for some such explanation.

His Friends.—Do you want to know what I am doing? I devote myself to my friends, with whom I enjoy the most delightful intercourse. With them I shut myself in a corner, where I escape the windy crowd and either speak to them in sweet whispers or listen to their gentle views conversing with them as with myself. Can anything be more comfortable than this? They never hide their own secrets, yet they keep sacred whatever is intrusted to them. They never divulge abroad what we confide freely to their intimacy. When summoned they are at your side; when not summoned they do not intrude. When bidden they speak; when not bidden they are silent. They talk of what you wish, as much as you wish, as long as you wish. They utter no flattery, feign nothing, keep back nothing. They frankly show your faults but slander no one; all that they say is either cheering or salutary. In prosperity they keep you modest, in affliction they console, they never change with fortune. They follow in all dangers, abiding with you even to the grave. Now that you may not miss the meaning of my metaphor, pray understand that all I have said about these friends to be meant of books, companionship with which has made me a truly happy man.—Erasmus.

HYPERTENSION

THE VALUE OF CALCIUM SALTS PLUS DIET IN ITS MANAGEMENT; A POSSIBLE CLASSIFICATION AND AN HISTORICAL PERSPECTIVE *

N. S. DAVIS III, M.D.
CHICAGO

During the past ten years or so I have been particularly interested in hypertension. About the time that Luckhardt, Dragstedt and their collaborators brought out their work on calcium lactate as a preventive of parathyroid tetany in dogs I commenced using it in hypertension on the theory that if it prevented tonic spasm in skeletal muscle it might also prevent tonic spasm in arteriolar muscle. At first it was administered in doses of 15 Gm. in water three times daily before meals. This seemed to cause a marked improvement both subjectively and objectively but was difficult and unpleasant to take. The dosage was then gradually reduced to 4 Gm. three times daily, but this did not seem to be as effective so it was increased to 8 Gm. three times daily. I am now reporting the results of the treatment of fifty-five patients treated by this method at the Northwestern University Medical Clinic.

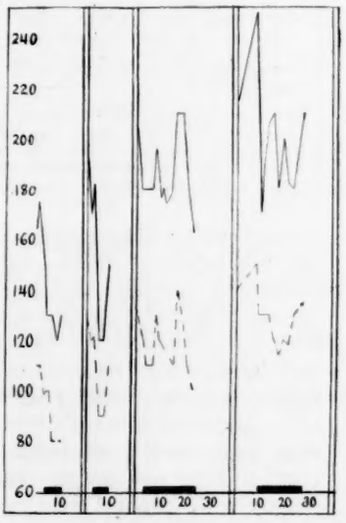


Chart 1.—Marked improvement under calcium lactate therapy as shown in four cases. In this and succeeding charts, the horizontal lines represent pressure readings and the vertical, time in weeks. The spaces blocked in at the base of the charts indicate the time during which calcium lactate was being administered.

In addition to the calcium lactate therapy, 8 Gm. before meals, the patients were given a diet low in salt and protein, with much of the protein from milk and with sufficient fruit and vegetables to make it adequate in every way. However, it is doubtful whether many of the patients were for financial reasons able to follow the diet accurately even if they had sufficient intelligence to do so. In fact, one patient (the first case in chart 4) said "How can I follow this diet when the county gives me only beans?"

In chart 1 are illustrated the blood pressure curves of four patients who appeared to improve either immediately after the calcium lactate therapy was instituted or within a few weeks of its inception. As a rule, patients were directed to report every second week and were given sufficient calcium lactate to last for that period.

In chart 2 is a similar group of five blood pressure curves in which there was no evidence of improvement under calcium therapy. In charts 3 and 4 are also curves which do not seem to have been affected one way or another by the calcium therapy. These curves are typical of those of patients who were under observation for a relatively short period.

Next to be considered are curves that are typical of the cases that were under observation for two years or

* Read before the Section on Practice of Medicine at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

more. In chart 5 there is the curve of a patient whose pressure dropped to within normal limits on two weeks of calcium therapy and remained there, as shown by only three or four readings during the next year or so. After the seventieth week following admission, the pressure readings were more frequent and calcium therapy was maintained from the seventy-eighth to the one hundred and thirty-ninth week. It seems that this patient, a woman, was not benefited by the calcium therapy; that the variations in the blood pressure may best be accounted for by classifying her as one who had intermittent hypertension. The curve in chart 6 shows a spontaneous remission shortly after her first admission with a return to a high level when readmitted a year later. There was an apparently marked response to calcium therapy which persisted as long as it was maintained. After the calcium lactate was stopped, the pressure dropped to a low normal but two weeks later was higher than previously recorded. Again there was a prompt response to calcium lactate, but twenty-nine weeks later, while calcium lactate was being taken, the pressure again went to a high level and again came down. This curve is also suggestive of an intermittent hypertension.

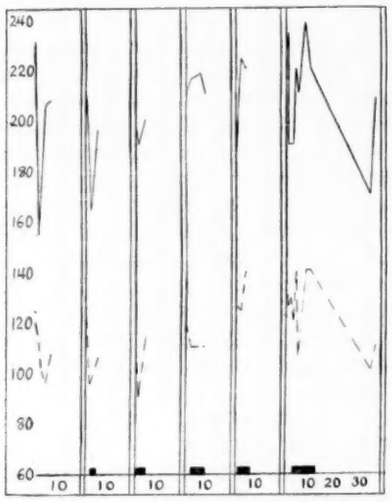


Chart 2.—The first case shows a marked drop without therapy; the second a drop before and a rise after the beginning of calcium therapy; the others show essentially negative results with calcium therapy.

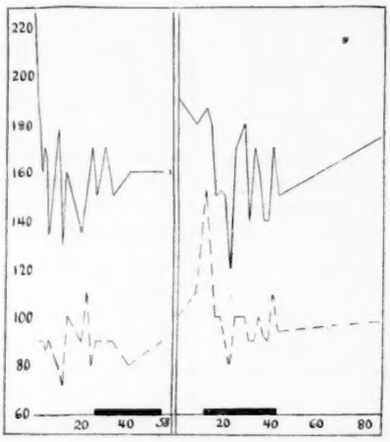


Chart 3.—In the first case there was a marked drop in pressure before calcium therapy was instituted and no change after; the patient was found dead in bed about four weeks after her last visit to the clinic. In the second case there was a marked fall in pressure after calcium therapy with a return to almost the same level while under treatment.

In chart 7 is the curve of a patient who took calcium lactate practically constantly for the 221 weeks she was under observation. She insisted that she felt better when taking it, though as far as could be seen it did not have much effect on the blood pressure; though, of course, one cannot say what would have happened if she had stopped it. As a matter of fact, all the patients stated that they felt better while taking the calcium lactate, and I believe that it was this that made it possible to keep them under observation for so long a time.

The curve in chart 7 is one of a moderate hypertension with occasional remissions to within normal limits. Chart 8 is the record of a Negro, aged 75, at his first admission; the curve is again that of moderate hypertension with occasional remissions to normal limits both before and after instituting calcium therapy. From time to time the patient had symptoms of heart failure, both anginal and congestive, sometimes when the blood pressure was high, at others when it was relatively low.

In chart 9 the curve is continuously high and is not unlike the temperature curves in patients with continuous septic fever. Again, while the pressure dropped considerably during the first eight weeks of therapy, the calcium lactate seems to have had little if any influence on the curve as a whole. In chart 10 is the curve of the patient who was under observation for the longest time. The pressure was constantly high when recorded during the first 230 weeks of observation. After calcium therapy was instituted the readings were more frequent and averaged lower than before, but it must be noted that after about the two hundred and forty-fifth week there were symptoms of cardiac infarction, confirmed by electrocardiographic studies.[1] So it is probable that the lower blood pressure while under calcium therapy was due at least as much to a failing myocardium as to the therapy.

In charts 11 and 12, the curves represent those of patients in whom the pressure continued to rise rather steadily whether or not they were under treatment. While the rise is not as rapid as in many cases of malignant hypertension that have been reported, the curves are steadily rising. It is interesting to note that of these two patients, both women, one was 37 and the other 45 when admitted to the clinic.

While it is impossible to draw any conclusions from the study of so small a group of patients—only thirty-two were under observation for a time long enough to make tentative classification possible—it seems that hypertension may be classified as intermittent, remittent, continuous or pernicious, just as was another symptom, fever, when the clinical thermometer was as new an

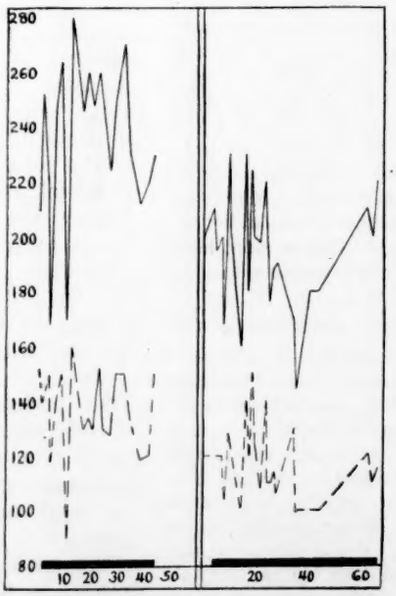


Chart 4.—In both these cases the pressure curves varied greatly under calcium therapy, but there was no real improvement during the period of observation.

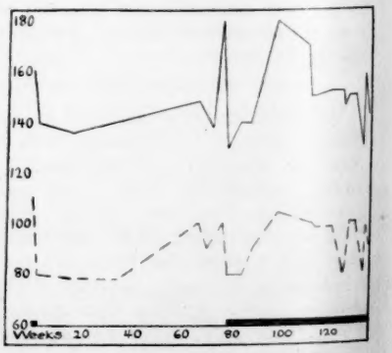


Chart 5.—In this case calcium therapy had little if any effect on the blood pressure curve. It seems to be one of those cases in which the hypertension is intermittent.

1. Davis, N. S. III: M. Clin. North America **13**: 406 (Sept.) 1929.

instrument as is the sphygmomanometer. Furthermore, while I am not going into the etiology of hypertension in this paper, it seems that there are many etiologic factors and many pathologic conditions or diseases of which it may be a symptom, just as there are many causes for and many diseases of which fever is a symptom. The malignant or pernicious hypertensions are generally recognized as being different, if only in degree, from the more common essential hypertensions. It is possible that essential hypertension is first intermittent, then remittent, then continuous. If this were the case, there should be more evidence of cardiac and renal damage as shown by electrocardiograms, retention of nitrogenous elements in the blood, renal function tests and urinary conditions in the continuous than in the remittent, in the remittent than in the intermittent cases. However from the accompanying table it will be seen that, in this series, at least, such differentiation is not possible; that the changes in one group are as great as in any other. The fact that the average age of the intermittent group is 46.6 years, the lowest of any save the pernicious, would support such a theory; but the fact that the average age of the remittent group is 59.3, whereas that of the continuous group is only 51.5, would not.

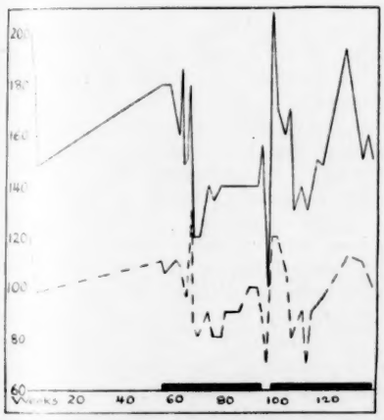


Chart 6.—Another case of intermittent hypertension. After thirty-seven weeks of calcium therapy with an apparent marked improvement, the calcium was stopped; there was a further drop in pressure and then a marked rise with a second drop when calcium therapy was instituted; however, there was another marked rise in pressure while under calcium therapy so it is doubtful whether the cessation of the therapy had anything to do with the previous rise.

As indications of arterial disease are present in all, it would seem logical to expect that cardiac infarction might occur at any time in the intermittent, remittent or continuous group and that cerebral hemorrhage might occur in any of them at a time when the pressure is up. The deaths of new policyholders from cardiac and cerebral accidents that so trouble the insurance companies may perhaps be explained by the fact that these policyholders had intermittent or remittent hypertension and were examined at a time when the pressure was normal and in accordance with insurance practice, not with sufficient care to bring out changes that could be found only by the electrocardiogram or by most careful studies of renal function and blood chemistry.

*Summary of Thirty-Two of the Fifty-Five Cases in this Study that Were Under Observation Long Enough to Warrant Classification**

	Intermittent	Remittent	Continuous	Pernicious	Total
Number of cases	8	9	13	2	32
Large Heart:					
2 M. plate	7	7	8	0	22
Pathologic cardiograms	5	7	13	2	27
Blood nonprotein nitrogen:					
Increased	2	3	3	1	9
Normal	2	0	1	1	4
Blood creatinine:					
Increased	1	0	1	1	3
Normal	1	4	2	1	8
Phenolsulphonphthalein test:					
Normal	4	6	3	0	13
Low	2	2	6	0	10
Urine:					
Fixed specific gravity	2	0	3	1	6
Albumin present occasionally	7	7	12	1	27
Casts present occasionally	5	2	10	1	18
Average age	46.6	59.3	51.5	41	52.1
Race:					
White	4	5	8	2	19
Negro	4	4	5	0	13
Sex:					
Male	4	2	5	0	11
Female	4	7	8	2	21

* There is not enough difference between the groups to make it probable that hypertension is first intermittent, then remittent, then continuous. The pernicious or malignannt hypertensions are more common in younger individuals and are generally regarded as a special variety of essential hypertension.

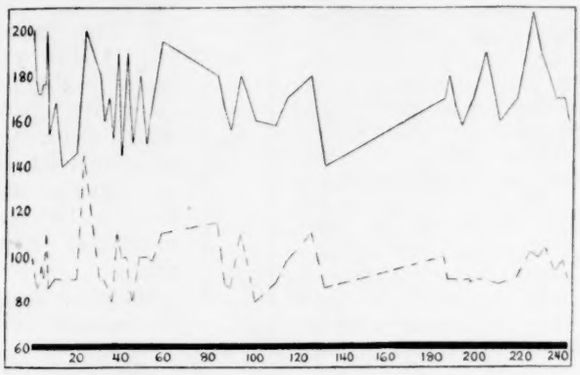


Chart 7.—This patient was under observation off and on for a period of 221 weeks, during all of which time she was taking calcium lactate. While her pressure was elevated, as a rule, there were frequent remissions.

SUMMARY

1. Calcium lactate, 8 Gm. in water half an hour before meals, plus a low salt, low maintenance protein diet, with most of the protein from milk, moderate in total amount but adequate in all respects, causes considerable subjective improvement in patients with hypertension but objectively is of little value.

2. It seems that hypertension, like fever, may be intermittent, remittent, continuous or pernicious.

3. It seems that, like fever, hypertension may be a symptom of several diseases or pathologic conditions for which there may be various causes.

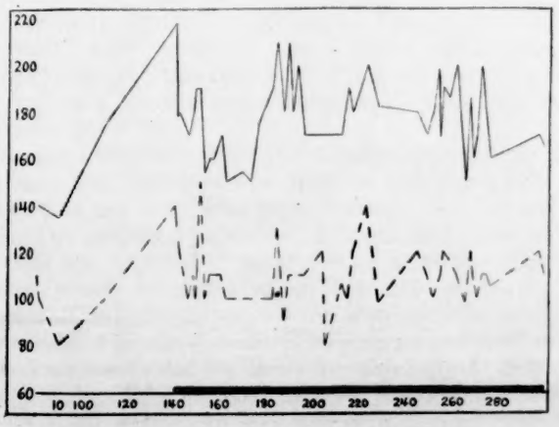


Chart 8.—Another case in which there were remissions to within normal limits, both when under calcium therapy and before it was instituted. In this case some of the remissions were associated with symptoms of heart failure. The patient was a man, aged 75, when he first visited the clinic.

4. It seems that just as our forefathers sought antipyretics to lower fever without considering the disease of which it was a symptom, we are seeking depressor substances to lower the blood pressure instead of con-

centrating on the description of the diseases of which hypertension is a symptom and their differentiation.

CONCLUSION

I should like to emphasize two points:

1. No cure for hypertension will be found until we are able to recognize the conditions of which it is a symptom.

2. The value of any therapeutic agent in the treatment of hypertension cannot be determined in a few days or weeks but only after months or years of trial.

700 North Michigan Avenue.

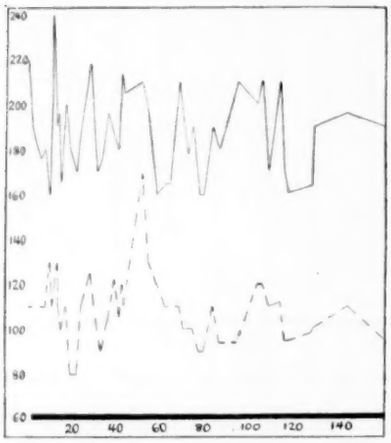


Chart 9.—The pressure in this case was continuously elevated, though it varied considerably from week to week. It seems probable that the calcium therapy had little if any influence on the pressure.

ABSTRACT OF DISCUSSION

DR. DAVID RIESMAN, Philadelphia: Dr. Davis's classification of hypertension as continuous, remittent, intermittent and pernicious in analogy with the classification of fever is interesting and clinically useful; the ideal classification of hypertension is, however, one based on etiology. But for that it will be necessary, I fear, to wait a long time, and until then one must be content with symptomatic and anatomic classifications that will not advance the treatment or prevention a great deal. The most interesting and important type of hypertension is that called essential. Not being complicated by any underlying organic disease it is apparently simple, and the approach to it ought to be simple, but the approach has not yet been found. While in the last analysis it is, as suggested by Dr. Davis, only a symptom, it seems to me that it partakes in many ways of the nature of a clinical entity, and the profession is, I think, so considering it. The diagnosis of essential hypertension is easy. The patient is usually an individual, otherwise healthy, of middle age, in whom the arteries are not hard, whose kidneys function normally, and who does not have aortic insufficiency or hyperthyroidism. Common as these cases are, the reason why they occur is unknown. Heredity is a factor but not an explanation. Two elements it seems to me are important: psychic factors and toxic agents. Both of these seem to act as vasoconstrictor influences. The psychic factor is ignored by many. The toxic factor has been searched for, but so far not with encouraging results. Whether the hypothetic toxins are hormones acting in excess or whether they are exogenous or autogenous poisons, or whether there are disturbances in the vitamin metabolism is not known. Studies on the carotid sinus and on the depressor nerve in animals, showing the powerful influence that these structures have on blood pressure, suggest interesting leads that may in time be valuable. It is important always to take the diastolic pressure as well as the systolic. Those whose diastolic pressure is high are in greater danger than those in whom it is low; cephalopathy, coronary closure and cardiac failure seem to be the most frequent end-results. Vertigo is sometimes the earliest of all symptoms, inaugurating decompensation. With regard to treatment, as Dr. Davis has said, there is no drug that cures hypertension. The best treatment is psychotherapeutic. To take the load off the patient's mind by assuring him that hypertension is not synonymous with immediate or early death does more than all the drugs in all the pharmacopeias. The physician must enter into every detail of the patient's activities, mental and physical, and he must so shape them that the patient keeps within his limits. That type of handling requires time, patience and understanding, but I believe there will be plenty of reward for it.

DR. SOMA WEISS, Boston: Optimism in one's efforts, and skepticism in the evolution of the results are essential in the field of therapeutics. This paradoxical combination of qualities is especially important in the field of diseases associated with high blood pressure. The well recognized spontaneous fluctuations in the height of the blood pressure and in the symptoms make the evaluation of therapeutic agents particularly difficult. Unless the therapeutic results are striking in a large group of cases, longer experience usually brings disappointment. This has been my experience with a number of substances which I have studied during the past few years, with the aid of quantitative methods applicable in man. Neither the height of the blood pressure nor the symptoms of the patient have a definite relationship to the fundamental etiology. The symptoms are the expression of disorders of the central nervous system and usually of an unstable vasomotor system. There is, moreover, no relationship between the symptoms and the height of the blood pressure. These criteria, therefore, without further specification and reservation, cannot be used as indications for the use of a therapeutic agent with the claim of beneficially influencing the natural course of the disease. Dr. Davis rightly emphasized caution in interpreting results. Once more, the management of the individual patient rather than the administration of a chemical substance is the center of the problem.

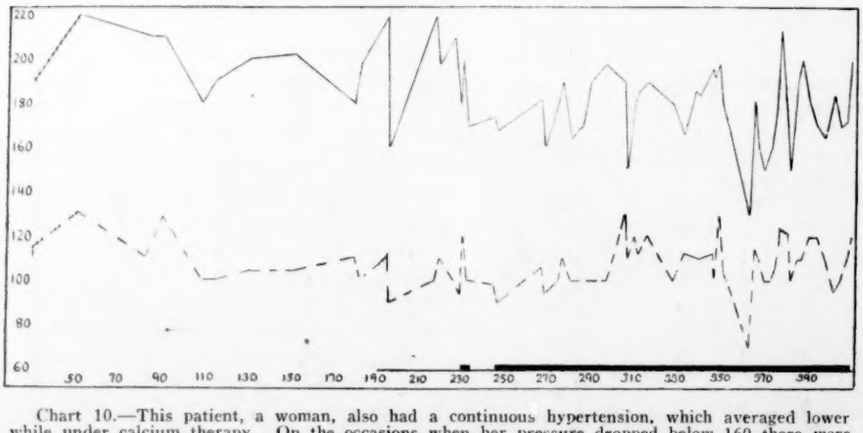


Chart 10.—This patient, a woman, also had a continuous hypertension, which averaged lower while under calcium therapy. On the occasions when her pressure dropped below 160 there were symptoms and electrocardiographic evidences of cardiac infarction. It is entirely possible that the apparent improvement under calcium therapy was due to myocardial weakness rather than to the treatment.

DR. F. ASHLEY FAUGHT, Philadelphia: I believe, as has been stated, that one should treat the patient from the standpoint of etiology and endeavor by careful examination to determine the underlying causes and not treat the blood pressure. I think the adage "Moderation in all things" should apply to the consideration of blood pressure, remembering that it is a symptom and not a disease. I would caution that one must consider original blood pressure observations as notoriously misleading. One frequently sees patients for the first or second time with blood pressure in distinctly the hypertension level who thereafter, ignoring that factor in the treatment, fail to show even over many years the same high level as first encountered. I believe that one should establish the patient's average blood pressure level, his pathologic norm, before considering the relation of blood pressure to his condition; and I am sure many will agree with me that very little is known of the relation of the actual blood pressure level, either systolic or diastolic, to many conditions met. Why is it that patients with an average systolic pressure of from 160 to 175 may die suddenly, whereas on the other hand some patients with pressures well above 200, sometimes above 300, run on for

an interminable number of years, apparently without serious effects from the high blood pressure? In closing, I wish to reiterate what has been said. One should follow the blood pressure, but not depend on its level for treatment, or indeed for diagnosis; but by careful study and close observation one may hope to find the fundamental causes producing the elevated pressure, so that by complete control of the patient's habits and environment, and ignoring blood pressure, one may hope to restore that patient to a better level of health, which will allow him to take care of the change in blood pressure without specific medication.

DR. S. A. SAVITZ, Philadelphia: So far we all agree with regard to rest, diet, and the employment of nitrites when absolutely indicated. I am of the opinion that rest is the most essential factor and that the importance of rest to patients is not emphasized. Even busy people could easily take an hour or two of rest every afternoon. I regret that the previous speakers did not mention a word about calcium in the treatment of hypertension. I do not agree with the author. Calcium salts are used a great deal and most effectively in anemia and cardioneurasthenia. When associated with low blood pressure, not high blood pressure, it seems to steady and strengthen the heart. It is also used at times in conjunction with digitalis to overcome persistent weakness of the myocardium, and at times has been found valuable in flutter as an adjunct to digitalis. Some authorities claim good results from calcium salts to ward off heart failure in pneumonia, influenza and other infectious diseases; that the calcium salts are contraindicated in the presence of a pathologic fibrosis of the vessels of an individual showing high blood pressure is, to my mind, an undisputed fact. Admitting that the calcium salts would be of value in cases of hypertension, and this I doubt, certainly in extraordinarily large doses they couldn't possibly do any good because the gastro-intestinal disturbances are marked and persistent.

DR. H. O. MOSENTHAL, New York: I should like to mention the fact, which Dr. Riesman has stressed, that malignant hypertension, or pernicious hypertension, really depends on nothing more than the height of the diastolic pressure, and that one should not use this term unless one has such a relationship in mind. Patients with a high diastolic blood pressure are the ones who are in jeopardy and who may be afflicted with fatal complications at any moment. This is not an invariable rule but is the one that furnishes the most reliable prognostic guide.

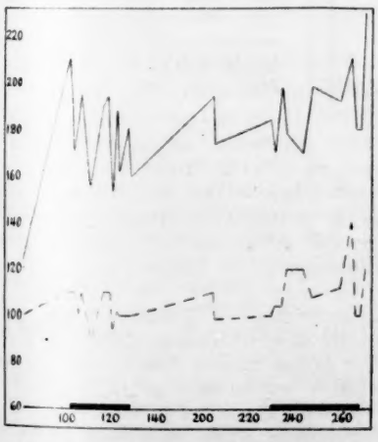


Chart 11.—One of the cases in which the pressure tends to rise steadily in spite of treatment. This is probably one of the cases that has been described as "malignant hypertension."

Drs. Davis and Riesman have both mentioned the advisability of low protein feeding in the treatment of hypertension. If this dietetic therapy is carried out it should be remembered that if a hypertensive or nephritic patient, or for that matter any human being, is given too little protein to eat, for a long period, he is prone to become weak and anemic; and because of the starches and fats which are substituted for the proteins he is likely to put on flesh and become obese. Therefore it is possible that a good deal of harm may be done if a low protein, high fat and carbohydrate diet is carried out with too much enthusiasm. In fact, patients as well as normal persons do better if one errs in the opposite direction and gives them too much protein food rather than too little. By restricting the protein in cardiorenal disease, one aims at controlling the hypertension and the pathologic processes in the kidneys. Proteins in themselves will not increase blood pressure; there is ample demonstration of that contention. I am beginning to believe that larger amounts of protein than are ordinarily consumed by man will not damage the kidneys even when nephritis is present. Patients live longer and are more vigorous with a rather high protein diet than with a low one, because they do not become anemic, they do not develop obesity, and their tissues maintain a better tone. Patients in whom the blood urea nitrogen is elevated, that is, those having a certain degree of renal insufficiency, apparently are not invalided as readily if they are allowed a fair protein ration as if the nitrogen containing foods were interdicted entirely. This is a radical departure from the ideals of dietetic therapy of cardiorenal disease which was present fifteen, ten or even five years ago, but I believe it is the form of diet most observers interested in Bright's disease are advocating at the present time.

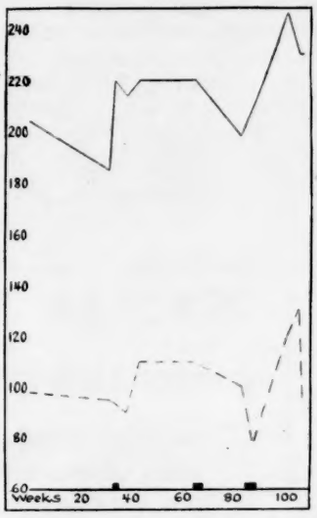


Chart 12.—A patient who was most irregular in attendance at the clinic and who had a steadily rising blood pressure; undoubtedly a "malignant hypertension."

DR. NATHAN S. DAVIS III, Chicago: I agree with Dr. Mosenthal that the low proteins should have been a low maintenance protein that would give these patients on the average from 60 to 75 Gm. of protein a day at least, and if they did have evidence of renal involvement and were excreting protein more would be given. Those that were overweight I put on a relatively low diet all around to try to get reduction in weight.

ASCARIS LUMBRICOIDES

LOSS OF INFESTATION WITHOUT TREATMENT *

A. E. KELLER, M.D.

NASHVILLE, TENN.

A study of intestinal parasites in children was made between November, 1929, and January, 1930, in one of the state institutions just outside of the city of Nashville. A total of 476 children were examined, ranging in age from 7 to 18 years. Of that number, 5 per cent were found to be infested with Ascaris lumbricoides, 6.5 per cent with Trichuris trichiura, 4.6 per cent with Necator americanus, and 4.8 per cent with Hymenolepis nana.

During December, 1929, a sanitary inspection of the buildings and premises was made in order to ascertain whether or not conditions were favorable for the transmission of intestinal parasites. Excreta and other waste material are disposed of by means of a sewage disposal system which is connected to the city of Nashville sewers. The water supply of the institution is obtained from the city water system. The interiors of the buildings, dormitories and the equipment, including the bathrooms and toilets, were clean and in good condition. The grounds were clean and well kept, and no evidence of human fecal pollution was found anywhere on the premises. The conclusion reached after the inspection was that there was very little opportunity for the transmission of intestinal parasites in and about the institution, and that the children who harbored them were infested before admission to the institution.

* From the Department of Preventive Medicine and Public Health of Vanderbilt University School of Medicine.

No anthelmintic treatment was administered after the initial survey. In February, 1931, a reexamination was made of the thirty-six children who were still in the institution and who had previously been found to have eggs of intestinal parasites in the feces. The accompanying table shows the results of the two examinations.

It will be seen from this table that twenty-two of the thirty-six children were found to have ova of Ascaris lumbricoides on the first examination. The technic of examination used throughout the entire study was the Stoll method of egg counting by which both the incidence and the intensity of infestation can be determined. In the children who had arcaris infestation, the worm burden varied from 400 to 272,800 eggs per gram of feces, with an average of 29,000. On the reexamination of this group of children in February, 1931, fourteen months after the initial examination, eggs of Ascaris lumbricoides could not be demonstrated in the feces of any of them, despite the omission of anthelmintic treatment. This finding indicates that under proper sanitary conditions, when the opportunity for reinfestation is eliminated, Ascaris infestation was lost in from twelve to fifteen months.

Examination and Reexamination for Intestinal Parasites in Thirty-Six Children

	Eggs per Gram of Feces							
	First Examination Nov., Dec., 1929, and Jan., 1930				Second Examination Feb., 1931			
Case Number	Ascaris lumbricoides	Trichuris trichiura	Hookworm	Hymenolepis nana*	Ascaris lumbricoides	Trichuris trichiura	Hookworm	Hymenolepis nana*
1	0	0	0	+	0	0	0	0
2	0	1,200	0	0	0	0	0	0
3	400	1,200	0	+	0	300	0	0
4	7,600	0	0	0	0	0	0	0
5	17,600	1,200	0	0	0	0	0	0
6	4,000	0	0	0	0	0	0	0
7	2,400	0	0	0	0	0	0	0
8	800	0	0	0	0	0	0	0
9	23,200	800	0	0	0	0	0	0
10	0	0	7,600	0	0	0	0	0
11	25,000	0	0	0	0	0	0	0
12	0	0	0	+	0	0	0	0
13	0	1,200	3,600	0	0	600	2,400	0
14	0	2,400	2,400	+	0	0	3,200	0
15	0	0	0	+	0	0	0	0
16	0	0	0	+	0	0	0	+
17	10,200	300	900	+	0	0	0	0
18	272,800	0	0	0	0	0	0	0
19	22,800	2,800	0	0	0	0	0	0
20	40,800	2,400	0	0	0	0	0	0
21	0	7,200	0	+	0	4,400	0	+
22	28,800	0	0	0	0	0	0	0
23	17,400	1,800	0	0	0	0	0	0
24	78,400	0	0	+	0	0	0	0
25	23,200	800	0	0	0	0	0	0
26	0	0	0	+	0	0	0	0
27	2,000	0	800	0	0	0	0	0
28	0	0	0	+	0	0	0	0
29	0	0	0	+	0	0	0	0
30	5,100	1,200	0	0	0	0	0	0
31	0	0	9,600	0	0	0	0	0
32	4,400	0	0	0	0	0	0	0
33	65,200	2,400	0	0	0	0	0	0
34	0	0	3,200	0	0	0	1,600	0
35	6,400	0	0	0	0	0	0	0
36	1,800	0	0	0	0	0	0	0

* Specimen contained eggs of Hymenolepis nana. It does not indicate intensity of infestation.

Otto[1] showed that treatment of ascaris infestation without sanitation is not effective in control of ascaris lumbricoides and he stated that the use of proper methods of disposal of feces in any community would reduce the worm burden of infested people without the use of vermifuges. He found, following treatment for ascaris infestation in a group of individuals of all ages in Virginia, that about one year later the intensity of infestation had returned to the pretreatment level. The results reported in this paper confirm Otto's suggestion and show that it is possible to control ascaris infestation by the proper disposal of human excreta without the use of anthelmintics.

It is of interest to note the decrease in the incidence of Trichuris, hookworm and Hymenolepis nana in these individuals during this period. The incidence of Hymenolepis nana decreased 83.4 per cent while Trichuris showed the next greatest decrease, 75.6 per cent, and hookworm showed only a decrease of 59 per cent. From the table it is evident, therefore, that under the conditions mentioned there will take place a decrease in these four intestinal parasites without the use of vermifuges. The loss of worms occurs most rapidly in the case of Ascaris, somewhat more slowly in the case of Hymenolepis nana and Trichuris and most slowly in the case of hookworm.

1. Otto, G. F.: Ascaris Lumbricoides: Treatment, Loss of Worms and Reinfestation, J. A. M. A. **95**: 194-196 (July 19) 1930.

CONCLUSIONS

The results obtained from this study show that under environmental conditions which are not suitable for the transmission of intestinal parasites the worm burden of infested individuals is markedly reduced without the use of anthelmintics. In this group of patients who did not receive treatment over a period of fifteen months a reduction in incidence of 100 per cent occurred in the cases of Ascaris, 83.4 per cent in the cases of Hemenolepis nana, 75.6 per cent in the cases of Trichuris and 59 per cent in the cases of hookworm infestation. This study shows that proper methods of disposal of human feces are more effective in the control of the common human intestinal parasites than the use of anthelmintics alone.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

W. A. PUCKNER, Secretary.

NAUSEATIN I AND NAUSEATIN II NOT ACCEPTABLE FOR N. N. R.

Nauseatin I and Nauseatin II are mixtures recommended for simultaneous administration by means of an atomizer with compressed air or oxygen as a "causal remedy against sea & air-sickness, railway sickness, hyperemesis gravidarum, all cases of central vomiting." The formulas for these mixtures are stated to have been devised by Franz Dammert, M.D., Munich, Germany; they are manufactured by Krause Medico Gesellschaft m.b.H., Munich, Germany.

No statement of the composition of Nauseatin I and Nauseatin II is contained on the label of these preparations; nor is such a statement supplied in the circular that accompanies the package. In the information sent to the Council, Nauseatin I is stated to contain "The total glycosides of Belladonna 2 gr. containing atropin 40 mgr., containing hyosciamin 20 mgr.," "Liquor Uzara 2 gr. containing the total glycosides (species Comphocarpus) of an african Asclepiadacea," "Papaverin 2.5 gr.," "Scopolamine hydrobromic. 0.05 gr.," some peppermint oil as a flavor, glycerin as a vehicle, dissolved in distilled water to make 100 cc. Nauseatin II is stated to contain "Suprarenin bitartaric. 0.08 gr.," "Extract of the Pituitary gland 60 ccm. standardised on fresh gland 1 ccm. = 15 Vögtlin E. = 0.105 gr. fresh gland," calcium chloride 2.5 gr., some peppermint oil as a flavoring agent, glycerin as a vehicle in distilled water sufficient to make 100 cc. (In these statements of composition "gr." is used as an abbreviation for gram.) It was stated that the process of manufacture "is the usual and regular, to make an aqueous extract of the ingredients": since there is no "usual and regular" process

for the unofficial "Liquor Uzara" the statement of composition is unsatisfactory so far as this ingredient is concerned.

According to the advertising which accompanies the packages, the "synthesis" of these preparations "is such, that they causally embrace the whole genesis of sea and air-sickness." "Nauseatin I contains spasmolytical, analeptical and excitation-reducing drugs. Nauseatin II contains extracts derived from the hormona of the suprarenal glands and the infundibular lobe with addition of calcium."

The composition of these mixtures is typical of the complex "shotgun" preparations that were in vogue many years ago—it even includes the proverbial "joker" or ingredient of doubtful composition and potency in the "Liquor Uzara." While, as with all "sea sick" remedies, the psychic effect of the inhalation of two medicaments through one atomizer and under compressed oxygen will no doubt result in many a "cure," it does not require an extensive knowledge of drugs to appreciate that there is no scientific basis for these mixtures.

Before going further into this phase of the discussion, it might be pointed out that it is practically impossible to judge of the amounts of certain of the constituents said to be present in the mixtures, on account of the indefiniteness of the statements concerning them. For example, what is meant by 2 grams of the total glucosides (?) of Belladonna containing 40 mg. of atropin and 20 mg. of hyoscyamine? Possibly 2 grams of Belladonna is meant and the total 60 mg. named represents 0.3% of the 2 grams. Nevertheless it is plainly stated to contain 2 grams of the total glucosides (?) of Belladonna.

Coming now to a consideration of the preparations themselves, a mere statement of the constituents which the patient would receive when he inhaled the vaporized mixture of No. 1 and No. 2 is sufficient to indicate the typical antiquated shotgun character of the remedy. The patient, aside from the oxygen and the psychic stimulus, would get a depressive action from the hyoscyamine; a possible stimulant action from the atropine; an inhibition of secretions from the combined action of the belladonna alkaloids named; a relaxation of the nonstriated muscle due to these alkaloids, aided possibly by the papaverine and by the epinephrine; but this action would be neutralized more or less completely by the pituitary and possibly by the calcium. Just what other effects calcium administered by the lungs would have is rather hard to guess. If this is not enough for the sea-sick individual, Liquor Uzara is added "to equilibriate the vago-sympathetic nervous system." It would not be surprising if the system would need it about this time!

Enough has been said to indicate the unscientific character of the mixture and the practical impossibility of even guessing what the total effect of such a complex mixture is going to be when it is administered to the human patient.

Nauseatin I and Nauseatin II are unacceptable for New and Nonofficial Remedies because they are unscientific mixtures marketed with unwarranted claims and under nondescriptive, therapeutically suggestive names and without definite statements of composition on the labels or in the advertising.

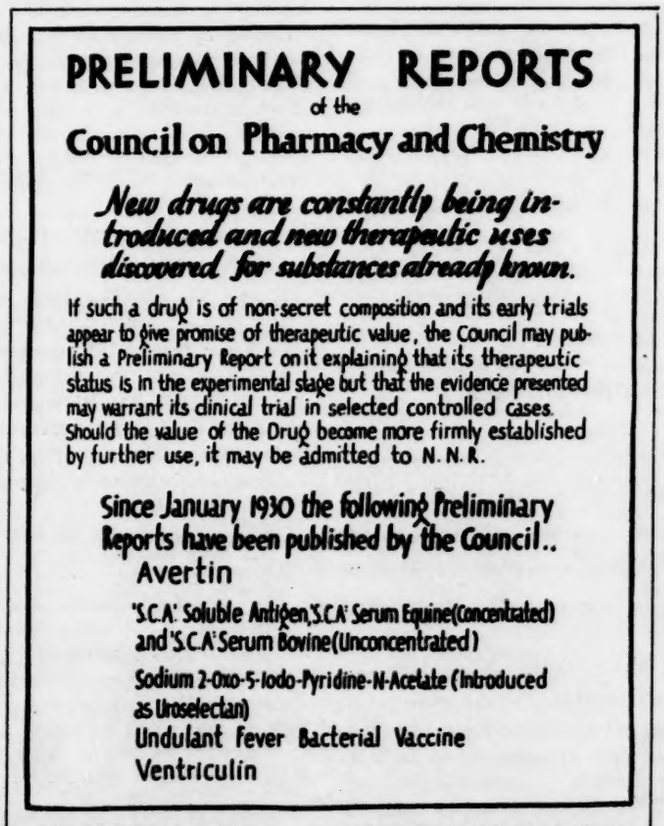
ALQUA WATER, CALSO WATER, AND ALKA WATER NOT ACCEPTABLE FOR N. N. R.

Alqua Water (Shasta Water Co., San Francisco, Shasta Springs, and Los Angeles, Calif.) and Calso Water (The Calso Co., San Francisco and Los Angeles, Calif.) are advertised as waters of which the alkaline content has been increased by the addition of unspecified amounts of various salts. The "formula" of Alqua Water is stated to be "Calcium Chloride, Sodium Phosphate, Sodium Chloride, Sodium Bicarbonate with added Glacier Water from Shasta Springs." Calso Water is offered ". . . as containing an aqueous solution, Calcium, Sodium Bicarbonate, Sodium Phosphate, Sodium Chloride and Magnesium Oxide proportioned in keeping with a physiological relationship." The advertising of both waters recommend them for use in combating acidosis.

The apparently frank statement in the advertising circulars (though not on the labels) of the composition of these products is really meaningless, since no quantitative declaration is made, leaving the products in effect mere secret preparations. The dangers of such uninforming statements of composition and the likelihood of radical and arbitrary changes being made without notice are too well known to need discussion.

The circular for Alqua Water consists mainly of long quotations of passages from a contribution on acidosis by Dr. Woodyatt of Chicago, in which are mentioned most of the diseases and intoxications mentioned in ordinary textbooks. The claim is made that Alqua Water meets the requirement of "alkali and fluid." The information given in the advertising circular for Calso Water in the main conveys the well known facts and concepts regarding acid base balance, carrying, of course, the implication that the product is an effective agent for correcting conditions in which an alkaline agent is needed to correct this balance. In other advertising the direct claim is made that Calso Water "counteracts and prevents acidosis." There are a few specially objectionable statements in the Calso Water circular: on page 3 there are unproved assumptions calculated to stimulate the demand for the product, and an attempt to create erroneous impressions by ascribing clinical symptoms to slight variations in the composition of the blood; on page 4 the good therapeutic effects of the water are ascribed to calcium and magnesium (ions), which is an inconsistency with the claims for alkalinity. The circular is correct in stating that Calso Water is not a cure all or a specific for any disease: this product, as well as Alqua Water, can accomplish no more than a little sodium bicarbonate in water obtainable in any home at much less cost. In general, it may be stated that the therapeutic claims made for these products are unwarranted, since there is no evidence for the efficacy of such weakly alkaline preparations in acidosis, etc., and they are without demonstrated advantage over ordinary water containing a little bicarbonate of soda.

The label of Alka Water (Carl H. Schultz Co., Brooklyn, N. Y.) gives a nonquantitative statement of composition similar


PRELIMINARY REPORTS
of the
Council on Pharmacy and Chemistry
New drugs are constantly being introduced and new therapeutic uses discovered for substances already known.
If such a drug is of non-secret composition and its early trials appear to give promise of therapeutic value, the Council may publish a Preliminary Report on it explaining that its therapeutic status is in the experimental stage but that the evidence presented may warrant its clinical trial in selected controlled cases. Should the value of the Drug become more firmly established by further use, it may be admitted to N. N. R.
Since January 1930 the following Preliminary Reports have been published by the Council..
Avertin
'S.C.A.' Soluble Antigen, 'S.C.A.' Serum Equine (Concentrated) and 'S.C.A.' Serum Bovine (Unconcentrated)
Sodium 2-Oxo-5-Iodo-Pyridine-N-Acetate (Introduced as Uroselectan)
Undulant Fever Bacterial Vaccine
Ventriculin

A reduced reproduction of a type of poster that has been shown in the Council on Pharmacy and Chemistry exhibits at the last four Annual Sessions of the American Medical Association. Preliminary Reports of the Council are worth reading. Watch for them in THE JOURNAL. They are also published at the close of the year in the Annual Reports of the Council on Pharmacy and Chemistry.

to those of Alqua Water and Calso Water. However, in an advertising circular the following quantitative statement appears: "Lithium Bi-Carbonate, 20.00; Magnesium Bi-Carbonate, 06.00; Calcium Bi-Carbonate, 90.00; Potassium Bi-Carbonate, 70.00; Strontium Bi-Carbonate, 02.00; Sodium Iodide, 00.05; Sodium Phosphate, 70.00; Potassium Sulphate, 00.05; Sodium Bi-Carbonate, 586.00; Sodium Chloride, 82.00; Parts in 100,000, 926.55; Grains to U. S. gallon, 540.178." Under the caption "What it is and What it Does" the circular follows the specious old custom of the venders of shotgun preparations by listing the virtues of each of the components of this complex mixture, leaving the uncritical reader to the assumption that the product has the virtues of each of the constituents: for example, the statement concerning the lithium bicarbonate reads: "Lithium Bi-Carbonate—Is alkaline and owes its virtues to the fact that it unites readily with uric acid, forming the urate of lithia, a freely soluble compound which passes readily from the system. For this reason it finds its most important application in diseases characterized by the uric-acid diathesis, otherwise known as uricaemia, lithaemia, or lithiasis. It is notably useful in cases of uric-acid sand, gravel and calculi, and in gout and rheumatoid arthritis. It is also of value in phosphatic deposits in the appendix, and in concretions, tophi, etc." This is a revival of the old fallacy that the lithium salts are solvents for uric acid in the system. The claims for the "alkalizing" value of this mixture are as unwarranted and objectionable as those for Calso Water and Alqua Water.

The Council declared Alqua Water, Calso Water, and Alka Water unacceptable because they are irrational proprietary mixtures, marketed with unwarranted and misleading therapeutic claims.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

MEAD'S DEXTRI-MALTOSE NO. 1
With Sodium Chloride 2%

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—Essentially a mixture of maltose and dextrins with 2 per cent added sodium chloride.

Manufacture.—The manufacture is the same as that for Mead's Dextri-Maltose No. 2 with the exception of the addition of 2 per cent sodium chloride (U. S. P.) to the final dry product.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	4.1
Added sodium chloride	2.0
Ash (other than that from the added sodium chloride)	0.5
Fat (ether extract)	0.2
Protein (N × 6.25)	0.2
Reducing sugars expressed as maltose	51.0
Dextrins (by difference)	42.0

Calories.—3.75 per gram; 106.5 per ounce.

Claims of Manufacturer.—Mead's Dextri-Maltose No. 1 With Sodium Chloride 2% is recommended for use as a carbohydrate supplement in the general diet of infants and is especially adapted to meet the carbohydrate requirements of infants and invalids. It is used in milk modifications suitable for children or adult invalids.

MEAD'S DEXTRI-MALTOSE NO. 2
Salt Free

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—Essentially a mixture of maltose and dextrins.

Manufacture.—An infusion of barley malt of known diastatic value is admixed with boiled starch and water; corn flour, potato, wheat, casaba or other starch may be used. The temperature of the mixture is carefully controlled to obtain a definite ratio of maltose to dextrins in the final product. The conversion is continued until tests indicate the absence of starch, at which time the mixture is brought to boiling to stop further diastatic action. The mixture is filtered under pressure through filter presses to remove insoluble cellulosic, fat and protein materials. The filtrate is concentrated in a "vacuum" evaporator, is decolorized by filtration through animal charcoal, dried, powdered and packed in tin containers.

All equipment is kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	4.1
Ash	0.5
Fat (ether extract)	0.2
Protein (N × 6.25)	0.2
Reducing sugars expressed as maltose	52.0
Dextrins (by difference)	43.0

(Dextrose is present in small percentage as shown by precipitation as osazone.)

Calories.—3.83 per gram; 108.8 per ounce.

Claims of Manufacturer.—Mead's Dextri-Maltose No. 2 is especially prepared for use as a carbohydrate supplement in general infant feeding and as a valuable ingredient in the diet of adult invalids; it is used where the addition of salt is not required. It is especially adapted to meet carbohydrate requirements in the diet of infants and invalids and is used in milk modifications suitable for children or adult invalids.

MEAD'S DEXTRI-MALTOSE NO. 3
With Potassium Bicarbonate 3%

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—Essentially a mixture of maltose and dextrins with 3 per cent added potassium bicarbonate.

Manufacture.—The manufacture is essentially the same as that for Mead's Dextri-Maltose No. 2 with the exception of the addition of 3 per cent potassium bicarbonate (U. S. P.) to the final product.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	4.1
Added potassium bicarbonate	3.0
Ash (other than that from the added potassium bicarbonate)	0.5
Fat (ether extract)	0.2
Protein (N × 6.25)	0.2
Reducing sugars expressed as maltose	51.0
Dextrins (by difference)	41.0

Calories.—3.71 per gram; 105.4 per ounce.

Claims of Manufacturer.—Mead's Dextri-Maltose No. 3 With Potassium Bicarbonate is recommended for use as a carbohydrate supplement in special infant diets and other special diet mixtures for meeting carbohydrate requirements. It is used in milk modifications suitable for children or adult invalids.

CROSBY'S BEST FLOUR

Manufacturer.—Associate companies of General Mills, Inc., Minneapolis.

Description.—A hard winter wheat patent flour designed for commercial bakers' use; packed in sacks.

Manufacture.—The manufacture is essentially the same as that for Gold Medal Flour "Kitchen-Tested" excepting that selected hard winter wheat is used. The milled flour is bleached and treated to improve the color and baking quality as described for Gold Medal Flour "Kitchen-Tested," although unbleached flour is furnished on request.

The flour is tested by the company's laboratory and experimental bake shop. The laboratory tests aid in controlling the mill operations; the experimental bake shop tests are to assure uniform baking results in commercial baking.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	13.0 –14.5
Ash	0.38– 0.42
Fat (direct ether extraction method)	0.8 – 1.2
Protein (N × 5.7)	10.5 –11.5
Crude fiber	0.3 – 0.5
Carbohydrates (by difference) other than crude fiber	75.0 –71.9

Calories.—3.49–3.44 per gram; 99.1–97.7 per ounce.

Claims of Manufacturer.—A good quality hard winter wheat patent flour designed to meet the requirements of the baking industry for an economical bread flour.

BORCHERDT'S MALT SUGAR

(Essentially Malt Sugar)

Manufacturer.—Borcherdt Malt Extract Company, Chicago.

Description.—The product is essentially maltose (87 per cent) obtained by conversion of starch by malt diastase; contains dextrins, proteins, mineral salts, and vitamins B and G.

Manufacture.—A mash of crushed barley malt and warm water is agitated; partially hydrolyzed starch in hot water is added at such a rate as to produce a definite temperature favorable for starch conversion in the mixture in a specified time. The temperature is slowly reduced to a definite point and maintained there for a specified time. Control tests of the conversion are made during this period. The solution is drawn off from the mash, filtered and evaporated in "vacuum" pans to a dry powder. The temperature during evaporation does not exceed 65 C. The final powder is tested for maltose and dextrin content by the standard "copper reduction" methods; and packed in cans.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	2.0
Ash	1.9
Fat (ether extract)	0.0
Protein (N × 6.25)	4.4
Reducing sugars, before inversion as maltose	87.0
Dextrins (by difference)	4.7

	per cent
Sodium (Na)	0.10
Potassium (K)	0.40
Calcium (Ca)	0.03
Magnesium (Mg.)	0.06
Iron (Fe)	0.001
Aluminum (Al)	0.01
Silicon (Si)	0.02
Chlorine (Cl)	0.01
Sulphur (S)	0.06
Phosphorus (P)	0.41
pH (10 per cent solution)	7.2

Calories.—3.84 per gram; 109.1 per ounce.

Vitamins.—Five-tenths Gm. is slightly less potent in vitamins B and G than 0.3 Gm. of samples of dried yeast tested.

Claims of Manufacturer.—The product is recommended for infant feeding. It contains vitamins B and G in substantial quantities.

PABST-ETT (BRICK VARIETY)

A Pleasing Combination of "Process" Cheese, Milk Proteins, Milk Sugar, Milk Minerals

Manufacturer.—Pabst Corporation, Milwaukee.

Description.—A blend of process brick and process American cheese containing disodium and trisodium phosphates as emulsifiers, salt and concentrated milk whey.

Manufacture.—The manufacture is essentially the same as that for Pabst-ett (A Pleasing Combination of "Process" Cheese, Milk Proteins, Milk Sugar, Milk Minerals) excepting that a blend of process brick and process American cheese is added (THE JOURNAL, Oct. 27, 1931, p. 1227).

Chemical Composition (submitted by manufacturer).—

	(sample as is) per cent	(moisture free basis) per cent
Moisture	43.5	...
Ash	5.2	9.3
Salt in ash	1.8	3.2
Fat (ether extract)	24.0	42.5
Protein (N × 6.38)	19.5	34.6
Lactose (by difference)	7.8	13.6
Phosphorus (P)	0.31	0.54

Calories.—3.25 per gram; 92.3 per ounce.

Vitamins.—The vitamin content is essentially that of Pabst-ett (A Pleasing Combination of "Process" Cheese, Milk Proteins, Milk Sugar, Milk Minerals).

Claims of Manufacturer.—See this section for "Pabst-ett."

LAUB'S QUALITY BREAD

Manufacturer.—The Jacob Laub Baking Company, Cleveland, Ohio.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, 70 per cent patent flour of Northwest wheat, water, yeast, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, dextrose, lard, sweetened condensed skimmed milk, oil and a partially hydrolyzed starch to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms for the materials used are kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	36.6
Ash	1.8
Fat (ether extract)	2.9
Protein (N × 6.25)	9.1
Crude fiber	0.5
Carbohydrates (by difference) other than crude fiber	49.1

Calories.—2.59 per gram; 73.6 per ounce.

Claims of Manufacturer.—A bread of good quality.

WHOLE WHEAT FLAKES—WHEATIES—WITH ALL THE BRAN

Deliciously Flavored with Sugar, Salt and Malt Syrup

Manufacturer.—Gold Medal Foods, Incorporated, a wholly owned subsidiary of General Mills, Inc., Minneapolis.

Description.—Toasted whole wheat flakes prepared from cooked wheat with added sucrose, salt and malt syrup.

Manufacture.—Selected wheat is cleaned of foreign materials by the usual procedure of wheat cleaning in flour milling, and is lightly "scoured" to remove the beard, dust and loose particles of bran but not any material proportion of the bran.

The clean wheat with definite quantities of sucrose, salt, malt syrup and water is cooked in revolving steam pressure cookers for about forty-five minutes. The cooked grain is air-dried, cooled and flaked between water-cooled steel rolls. Each wheat kernel forms an independent flake. The flaked wheat is toasted in gas-fired revolving drum ovens. The toasted flakes are cooled and automatically packed in cartons lined with wax-paper.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	1.5
Ash	4.5
Salt	3.0
Fat (ether extract)	1.2
Protein (N × 5.7)	12.5
Crude fiber	1.8
Carbohydrates (by difference) other than crude fiber	78.5

Calories.—3.75 per gram; 106.5 per ounce.

Claims of Manufacturer.—A good quality cooked and toasted whole wheat flakes.

MERRELL-SOULE POWDERED LEMON JUICE AND CORN SYRUP

Manufacturer.—Borden Sales Company, Inc., New York.

Description.—A spray-dried mixture of lemon juice and corn syrup.

Manufacture.—California lemons are carefully scrubbed and rinsed and pressed by machine. The expressed juice is strained and then admixed with high quality corn syrup. The mixture is sprayed into a drying chamber containing hot air currents; the dry solids collect on the chamber floor. The powder is packed in drums or tin containers.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	2.6
Ash	1.0
Fat (ether extract)	0.0
Lemon oil	0.7
Protein (N × 6.25)	0.8
Reducing sugars, as invert	28.0
Dextrins (by difference)	55.4
Crude fiber	0.0
Titratable acidity as citric acid (anhydrous)	11.5

Calories.—3.43 per gram; 97.4 per ounce.

Vitamins.—The vitamin C of the lemon juice is not materially impaired by the spray drying.

Claims of Manufacturer.—A good quality powdered lemon juice with corn syrup recommended for the preparation of lemon pies, beverages, and other lemon food preparations.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 31, 1931

METASTASES TO THE BONE FROM CANCER

Until a few years ago, information concerning the location of metastases from cancer was gained only by physical examination and necropsy. With the introduction of the roentgen ray, greater accuracy in studying the incidence of bony metastases in the skeleton became possible. Although some bones, such as the sternum and ribs, may not produce evidence of metastases in the roentgenogram, they can be demonstrated with the microscope. A combination of the two methods of study was followed by Copeland [1] in a report from Johns Hopkins University on 334 metastatic lesions of bone. He found among 757 deaths caused by the dissemination of mammary carcinoma that 11.8 per cent of the patients had lesions of the bone prior to death. The bones in which metastases most frequently were found in these carcinomas of the breast were the spine, pelvis, femur, skull, ribs and humerus. The metastases caused pain of a rheumatic character, which in the beginning might be mild or so excruciating as to require large doses of morphine. Patients showed great variability in their response to invasion by the tumor, the disease progressing rapidly in some with little bodily reaction, while others improved under treatment and lived useful lives for some time. The blood picture was normal in the early stage of these metastases but eventually showed a secondary type of anemia as the disease progressed. There were two types of metastatic lesions shown by the x-rays, the more common a bone destructive lesion, the other a bone forming process. The latter type occurred in outspoken fashion only twice in this series of cancers of the breast. Such formation of new bone, Bloodgood [2] has indicated, may be a point in the differential diagnosis of multiple tumors of the bone. If this new formation occurs as a mottling area within an area of destruction in the bone, a metastatic process as opposed to the punched-out areas of destruction seen in multiple myeloma is probably present. When the two conditions cannot be differentiated in the roentgenogram, the presence of Bence-Jones bodies in the urine favors the diagnosis of multiple myeloma. These metastases were most often multiple. A single focus occurred in only one fourth of the cases and the majority of them were in the vertebrae or femur. From the point of view of treatment, Copeland divides his patients having mammary cancers with bone metastasis into three groups: (1) those who had a radical amputation of the breast, (2) those who had only simple amputation of the breast and (3) those on whom no operation was performed. It was found that patients having carcinoma of the breast with metastases into the bone, when treated by the roentgen ray, may expect relief from pain and often a few months of comparatively comfortable living. However, resection of the affected part of the bone, in some cases, may be indicated for the relief of pain.

While hypernephroma is said to have a predilection for the bones, Copeland found it difficult to form a definite idea from the literature as to the incidence of bone involvement. In his study of sixty-three cases of hypernephroma, there were twenty-two instances, or 34.9 per cent, of metastases to the bones in the following order of frequency: humerus, spine, femur, pelvis, ribs, bones of the foot, skull and sternum. Little evidence of any attempt at the formation of new bone within the area of destruction was found in cases of hypernephroma. The microscopic picture was typical of hypernephroma of the renal type. The tumor in the bone had a characteristic brownish yellow color, flecked with red. Irradiation alone offers as much for the prolongation of life in hypernephromas with metastases to the bone as does surgical intervention alone or surgery combined with irradiation.

Among the 1,020 cases of cancer of the prostate were 134 instances of metastasis to the bone. Here, osseous lesions were most frequent in the pelvic bones, vertebrae and femur. Roentgenograms of the invaded bones showed the lesion to be of an osteoplastic nature with a marked increase in the formation of bone. Reaction of the bone to prostatic carcinoma is the reverse of that usually seen in other metastatic lesions, except where osteoclastic invasion by the tumor has been treated by the x-rays. Malignant disease of the testicle with metastases to the bone occurred once among thirteen cases of carcinoma and once among forty-two cases of sarcoma of the testicle. Among eighty-six cases of carcinoma of the uterus, 5.6 per cent showed metastases to the bone, in two of which the primary lesion was in the cervix. Roentgenograms of these metastases showed destruction of bone with little tendency to formation of new bone. Among sixty-nine cases of ovarian malignant disease were two instances with metastases to the bone. Among 537 patients with carcinoma of the stomach, registered in the laboratory,

1. Copeland, M. M.: Skeletal Metastases Arising from Carcinoma and from Sarcoma, Arch. Surg. **25**: 581 (Oct.) 1931.
2. Bloodgood, J. C.: Bone Tumors, Benign and Malignant: A Brief Summary of the Salient Features Based upon the Study of Some Three Hundred and Seventy Cases, Am. J. Surg. **34**: 229 (Sept.) 1920.

seven were subsequently found to have metastases to the bone, a percentage of 1.03. An interesting feature of the blood in one of these cases was a change of a pseudopernicious type, whereas the ordinary type of secondary anemia is usually seen. Of twenty-four patients with carcinoma of the lung, 16 per cent had metastases to a variety of bones, including the lumbar spine, pelvis, ribs or skull. Roentgenograms in these cases showed destruction of the bone with little formation of new bone. Among 169 cases of melanoma, 1.07 per cent showed metastasis to the bone. There was analyzed an additional group of thirty-one cases with metastasis to the bone, in which it was not possible to determine the primary focus.

Since the time of Virchow, various attempts have been made to explain secondary metastatic lesions. Von Recklinghausen [3] held that such tumors spread through the blood stream into the bone marrow. Handley,[4] who in 1906 presented the theory that cancer is disseminated by permeation of the lymphatics, believed that the majority of cases occurred by the extension of the tumor cells through the deep fascial lymphatics. There have been many advocates of both theories. Copeland in this review found evidence indicating that both an embolic and a lymphatic mode of involvement occurred. In individual cases the mode of metastasis will probably be determined by the duration and character of the primary tumor and the method of treatment.

CALCIUM IN GROWTH AND DEVELOPMENT

It is now about ninety years since Liebig enunciated the general principle of his so-called law of the minimum. This principle has proved of great service in the guidance of scientific research and in the practical feeding of growing children and of farm animals, and in the fertilization of crops. Yet we are still in process of learning just how this broad principle is to be construed. Most commonly it is taken to mean that, among the substances nutritionally essential to growth, that one which is furnished to the organism in minimum amount (relative to the need for growth at a normal rate) will thereby determine the rate of growth, the organism growing only to the extent that it can increase its size and at the same time maintain the normal composition of its kind.

This was strikingly illustrated in the classic researches of Osborne and Mendel on feeding experiments with isolated proteins with or without supplementation with individual amino-acids. Young animals on diets good in other respects but whose protein moiety was poor in the amino-acid lysine were restricted in growth in apparently direct relation to the paucity of the lysine supplied. Instead of growing up with lysine-poor bodies, they simply stopped growing or grew only at a rate at which they could make new body material of normal lysine content.

But when the same investigators fed diets good in other respects but poor in calcium, the effect on growth was not quite so uniform. Sooner or later growth was inhibited by the marked shortages of calcium which these experiments imposed; but the individual animals showed considerable variation as to the promptness of this response, some making considerable growth on food of such low calcium content that these animals must necessarily have been growing up calcium poor. The earlier experiments of Aron and Sebauer with dogs, and the later work of Sherman and MacLeod with rats, also showed that in a considerable proportion of cases growth continues on a calcium-poor diet to an extent sufficient to result in bodies of marked subnormal calcium content.

Smith's [1] recent review of the phenomena of retarded growth and a simultaneous paper by Sherman and Booher [2] have emphasized anew the important fact that there is need for discrimination in predicting the effects of different nutritional shortages on growth, and equally that we should be on our guard against a false sense of security in assuming that the absence of any appearance of stunting necessarily means excellence of nutritional condition throughout. Smith cites the evidence afforded by experiments with varied types of nutritional shortages. From this it appears that the investigator must discriminate between different categories of retarded development as resulting, for instance, from low calory, low lysine or low ash dietaries, respectively. Sherman and Booher present the results of experiments on the calcium content of the body as influenced by that of the food. In these experiments it was found that with dietaries good in other respects and containing more calcium than in the experiments of Osborne and Mendel, but not the full liberal amount required for maximal calcium retention in the growing body, growth in height and weight may (and usually does) occur at a normal rate. There may, in fact, be every physical appearance of excellent nutrition, while the body is nevertheless growing up calcium poor, as shown in these experiments by actual analyses of the experimental animals. When these results are considered in relation to the data already on record regarding the relation of calcium intake to rate of calcium retention in growing children, it becomes highly probable (to speak conservatively) that an unduly large proportion of children who appear, even on careful physical examination, to be making normal growth and development are in reality in a more or less calcium-poor condition simply because their calcium intakes are not high enough to support an optimal rate of calcium retention. Fully normal development during growth

3. von Recklinghausen, F.: Die Fibrose oder deformierende Ostitis die Osteomalacie und die osteoplastiche Carcinose in ihren gegenseitigen Beziehungen, Festschr. der Assistenten für Virchow, 1891, p. 17.
4. Handley, W. S.: Cancer of the Breast and Its Operative Treatment, London, John Murray, 1906, pp. 1-176.

1. Smith, A. H.: J. Nutrition **4**: 427 (Sept.) 1931.
2. Sherman, H. C., and Booher, L. E.: J. Biol. Chem. **93**: 93 (Sept.) 1931.

demands a steady increase not only in the amount but also in the percentage of body calcium. The assurance of positive calcium balances is not sufficient. The body may be steadily storing calcium; but unless the rate of increase of body calcium is greater than the rate of increase of body weight, the growing body is being retarded in its normal development. In an extended experience with laboratory animals it has been found that the liberal calcium intakes which favor development in this respect result also in what McCollum and Simmonds have aptly called "the preservation of the characteristics of youth." They tend both to expedite development and to defer senility; and in all probability this is equally true in human nutrition. The fact that a calcium-poor condition of the body does not show itself in any obvious way—as, for example, an iron-poor condition shows itself in a tendency toward anemia—and the further fact that the deleterious effects of such a condition while not clear cut are probably far reaching, make it seem all the more scientifically logical and practically important that the child should be given the benefit of any doubt in connection with this aspect of his nutritional need. It seems desirable that the dietary of the growing child shall provide liberally for those phases of his development which depend on a relatively high rate of calcium retention.

Current Comment

BENDIEN'S METHOD OF CANCER DIAGNOSIS

The vast importance of the early diagnosis of cancer stimulates investigators in almost every country to seek a reliable method. Hence, premature publication of encouraging results is not infrequent. One of the latest methods for the diagnosis of cancer to be found unreliable, at least in its present form, is that of Bendien, a Dutch physician, who claimed that he was able to diagnose cancer on examination of the patient's blood serum by means of the ultraviolet spectrophotometer. Bendien's report was practically ignored in his own country, and his book, "Spezifische Veränderung des Blutserums," brought forth unsympathetic reviews. However, when Bendien visited London, in August, he received a great deal of publicity in the lay press. Indeed, the British Empire Cancer Campaign, although realizing that time must elapse before the real value could be determined, concluded, after a series of tests on normal and cancerous serum, that the test marked a definite advance in cancer research. In October, however, C. Gordon Watson, chairman of the Investigation Committee of the British Empire Cancer Campaign, informed the *Lancet* that, although preliminary results with the test were encouraging, the committee had made subsequent inquiries which failed to jusify the early promise and had come to the conclusion that the Bendien method of diagnosis for cancer cannot at present be accepted as reliable. Furthermore, after an investigation, the Institute for Preventive Medicine at Leiden came to a similar conclusion. These announcements from authentic sources are sufficient to forestall extensive efforts to confirm or further disprove Dr. Bendien's method. This failure, however, should not discourage others from seeking to discover a dependable method for the early diagnosis of cancer.

PROGNOSIS OF ACUTE ENDOCARDITIS IN CHILDHOOD

Some clinicians believe that children never recover from rheumatic heart disease and that Aschoff bodies, which are considered pathognomonic of rheumatic heart disease, never disappear. As these views did not accord with his clinical experience, Morse [1] studied a hundred children seen during their first attack of acute endocarditis, from ten to thirty years ago. Rheumatism, alone or in combination with chorea or tonsillitis, was the apparent cause in 57 per cent and tonsillitis and other infections of the upper respiratory tract in 22 per cent of the cases. Thirty-six of the hundred patients are dead; thirty-seven are well and have normal hearts; eighteen show some physical signs of chronic valvular disease; three are cardiac invalids; in six, the author is unable to determine that their hearts show anything of significance. All of the hundred children when first seen had a mitral systolic murmur; four of those who died had a mitral diastolic murmur when first seen and one an aortic diastolic murmur. One of the three cardiac invalids had a mitral diastolic and another a double aortic murmur; two of those who are now well and have normal hearts had a mitral diastolic murmur and one an aortic systolic murmur, when first seen. While these are slight differences, it would seem that murmurs other than mitral systolic, when heard early, point to some extent to a more serious involvement of the heart. Of the children who did not recover, 33 per cent died within four weeks and 66 per cent within four months of the onset of the disease; two thirds of the remainder died within five years. Of the children who are alive and well, with slightly damaged hearts, 40 per cent had repeated attacks of rheumatism, chorea and sore throat. Of those who are now alive with normal hearts, only 11 per cent had repeated attacks. Only one of the eighteen patients who are alive with slightly damaged hearts has a diastolic mitral murmur. Thus it appears that, even when complete recovery does not take place, the lesions at the mitral orifice are not necessarily progressive and deforming, as is now commonly believed. The prognosis of acute endocarditis in childhood is greatly influenced by the kind of care that the patient receives. The better the care, the better the prognosis. Many of the children whose care was designated as "perfect" or "very good" were kept in bed for months and then carried up and down stairs for months longer, and their mode of living was carefully controlled for years. Among those allowed to exercise as they pleased, the percentage who died within the first four months was high. The results apparently depended more on the care the children received than on any other single

1. Morse, J. L.: The Prognosis of Acute Endocarditis in Childhood: An Analysis of One Hundred Cases, Am. J. Dis. Child. **42**: 735 (Oct., part 1) 1931.

factor. The large number of complete recoveries and the relatively small number of deaths in this series are striking. Much remains to be learned about rheumatism. It seems, however, that complete recovery from acute endocarditis in children may occur even after repeated attacks of rheumatism.

THE REVOLT OF THE BIOCHEMIST

In a recent address, Dr. Phoebus A. Levene [1] called attention to the return of belief in nonchemical agencies effective in biologic functions in a way analogous to the vital forces without which the distinctive manifestations of life cannot be developed. There are scientists still alive who can recall the revolt, in the last century, against the long accepted doctrine of organic vital forces. To the chemist, in particular, such accomplishments as the synthesis of urea in the laboratory by Wöhler in 1828 and numerous subsequent demonstrations of the ability to produce artificially substances that were supposed to be restricted in origin to subtle processes of life offered a challenge against vitalistic hypotheses. Levene states that as early as 1860 the chemist Berthelot insisted that "the objective of our science is to banish 'Life' from the theories of organic chemistry." Although a century ago this subject dealt with the chemistry of organic life and, in a sense, every chemist was a biochemist, in more recent times synthetic organic chemistry became the chief concern of investigators. During this period the mechanistic conception of life came into prominence. Life was to be explained without recourse to other principles than those involved in physics and chemistry, due recognition being made of the present limitation of our knowledge of these sciences. But the mysteries of living matter have not yet been interpreted by simple means. The impatience with the slowness of progress, the seeming impenetrability of some of life's secrets, are bringing the mechanistic philosophy into disrepute; and, as Levene has insisted, a "neovitalism" is acquiring modern devotees. However, Spoehr [2] asserts that, backed by a century of experience in carbon compounds, the organic chemist is again turning to the chemistry of the living organism. And Levene has championed anew the hope that life shall not remain forever a word without an accurate definition. Reviewing the truly remarkable contributions of the past few decades to the domain of biochemistry, he insists that, despite the seemingly slow advance, step by step, one mystery of life after another is being revealed. As Levene concludes:

> Whether the human mind will ever attain complete and absolute knowledge of and complete mastery of life is not essential. It is certain, however, that the revolt of the biochemist against the idea of a restriction to human curiosity will continue. Biochemistry will continue to function as if all knowledge, even that of life, were accessible to human understanding. The past has taught that the solution of one problem always opens up a new one. New discoveries in physics, in mathematics, in theoretical chemistry furnish new tools to biochemistry, new tools for the solution of old problems and for the creation of new ones. So long as life continues, the human mind will create mysteries and biochemistry will play a part in their solution.

1. Levene, P. A.: The Revolt of the Biochemist, Science **74**: 23 (July 10) 1931; Chem. Bull., June, 1931.
2. Spoehr, H. A.: Science **70**: 462 (Nov. 15) 1929.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 9:15 a. m. on Monday and 10:30 a. m. on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

November 2. Superfluous Hair and Its Treatment.
November 7. Tonsils — In and Out.

Five Minute Health Talks may be heard over the Columbia Broadcasting System on Monday and Saturday from 12 to 12:05 p. m., Central Standard Time.

The program for the week is as follows:

November 2. An Ounce of Prevention.
November 7. Impetigo.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Charles P. L. Mathe, San Francisco, president of the San Francisco County Medical Society, was recently elected a chevalier of the Legion of Honor of France.——Dr. Percival Dolman, San Francisco, has been appointed a member of the board of medical examiners, succeeding Dr. William R. Molony, Los Angeles, it is reported.

Medical Certificates Lost.—Dr. William Wallace Behlow, lieutenant commander, medical corps, U. S. Navy, reported to the California State Board of Medical Examiners, October 13, that the following documents issued in his name had disappeared: medical diploma, Harvard University, dated June 20, 1912; intern certificate, Boston City Hospital, 1914, and California certificate to practice as a physician and surgeon, number A-01890, issued July 18, 1914.

Gifts to University of California.—The University of California reports that the following gifts, among others, were recently presented to the university: $5,000 by the Carnegie Corporation of New York for the research of Edward C. Tolman, Ph.D., in psychology; $1,500 by W. H. Crocker for pediatric research by Dr. William P. Lucas in the medical school; $675 by Eli Lilly and Company, Indianapolis, for research in anatomy and pharmacology; $500 by the National Research Council for the work of Bennet M. Allen, Ph.D., on thyroid glands at the University of California at Los Angeles, and $600 by E. Charles Fleischner Endowment Fund, San Francisco, for its fellowship in the communicable diseases of childhood.

Society News.—Dr. Leroy Brooks, San Francisco, addressed the Contra Costa County Medical Society, Richmond, September 15, on special aspects of surgery in children.——Dr. Edgar L. Gilcreest, San Francisco, addressed the Santa Barbara County Medical Society, September 14, on "Partial and Complete Rupture of Muscles, More Especially of the Biceps Flexor Cubiti," and Dr. Philip C. Means, Santa Barbara, spoke on "Arguments Against State Medicine."——Dr. Langley Porter, San Francisco, addressed a recent meeting of the Santa Cruz County Medical Society on "Abdominal Conditions in Childhood."——Dr. Mark L. Emerson, Oakland, among others, addressed the Alameda County Medical Association, October 19, on "Mosquito Abatement" with motion pictures and slides.——Karl F. Meyer, Ph.D., San Francisco, addressed the San Diego Academy of Medicine, October 27-28, on "Food Poisoning — Causes and Prevention." Dr. Albert Kuntz, St. Louis, will speak before the academy, November 12, on "Anatomy and Physiology of the Sympathetic Nervous System," and Dr. Clifford G. Grulee, Chicago, November 13, on "Diagnosis and Treatment of Intracranial Injury and Hemorrhage of the New-Born."

COLORADO

Society News.—At the meeting of the Medical Society of the City and County of Denver, October 20, Dr. Harry L. Baum spoke on "Relation of Allergic Nasal and Sinus Disease to Asthma"; Dr. John R. Evans, "Trichomonas Vaginitis," and Dr. George M. Blickensderfer presented a case of psychoneurotic vomiting.

Dr. Jackson Honored.—A portrait of Dr. Edward Jackson was unveiled and presented to the Medical Society of the City and County of Denver at its meeting, October 6. Dr. Robert Levy made the presentation of the portrait, which was a gift of Dr. Jackson's friends, and Dr. Samuel B. Childs gave the speech of acceptance. Dr. John W. Amesse was the toastmaster. The scientific paper of the evening was presented by Dr. Seymour D. Van Meter on goiter. Among those present at the meeting were Dr. Henry Sewall, Dr. Hubert Work, William W. Grant, Jr., Denver attorney, and J. I. McClymont, the artist who painted the portrait. Dr. Jackson, who has lived in Denver since 1898, served as professor of ophthalmology at the University of Colorado College of Medicine from 1905 to 1921, and in 1925 was president of the Colorado Commission for the Blind.

DISTRICT OF COLUMBIA

Personal.—Dr. Ray Lyman Wilbur, secretary of the interior, Washington, received the honorary degree of doctor of laws at the annual convocation of the University of the State of New York, October 15.——Lieut. Comdr. Franklin F. Murdoch, acting executive officer of the Naval Medical School, has been appointed professor of tropical medicine at George Washington University School of Medicine.

Medical Lectures for the Public.—The Medical Society of the District of Columbia has arranged to give a series of free lectures in the interest of public health education, Sunday afternoons, through the fall and winter months. Dr. James P. Leake, U. S. Public Health Service, opened the series, October 25, with a talk on infantile paralysis. Other lectures to be given will include a talk on mental health, November 8, by Dr. William A. White, and one on physical fitness at 50, December 6, by Dr. Wallace M. Yater. A symposium entitled "When Winter Comes" will feature the meeting, November 22; the speakers will be Drs. Henry C. Macatee, Margaret M. Nicholson and James A. Flynn.

ILLINOIS

Society News.—Dr. James H. Hutton, Chicago, addressed the La Salle County Medical Society, October 27, on "Recent Advances in Endocrinology."——The Stephenson County Medical Society was addressed, October 15, by Drs. Emmet B. Bay, Chicago, on "Cardiographic Tracings"; Bayard T. Horton, Rochester, Minn., "Buerger's Disease"; William T. Coughlin, St. Louis, "Brain Tumors."——Dr. Michael Goldenburg, Chicago, addressed the Peoria City Medical Society, October 20, on "Diseases of the Eye Encountered in General Practice."

Memorial Tablet to Army Surgeons.—The memory of two army surgeons, Drs. John Gale and Richard M. Coleman, was honored at the dedication of a tablet on the Rock Island Arsenal grounds by the Rock Island County Medical Society, October 20. These men served in the U. S. Army when Fort Armstrong was one of the military centers of the West. The tablet is said to be one of the few in Illinois marking the graves of physicians, and the only one memorializing the heroic work of army surgeons. Dr. Gale died in 1830. Dr. Coleman died in 1832 of Asiatic cholera. Dr. William H. Myers, Coal City, president of the county medical society, unveiled the tablet, and Col. David M. King, commanding officer, Rock Island Arsenal, gave the acceptance speech. Dr. Joseph De Silva was toastmaster at the dinner program. Mr. John H. Hauberg of the Illinois Historical Society spoke on "U. S. Army Surgeons at Fort Armstrong," and Dr. Irving S. Cutter, dean, Northwestern University Medical School, Chicago, spoke on "Drs. John Gale and Richard Coleman."

Chicago

Dr. Cole Will Deliver Pasteur Lecture.—The twelfth Pasteur Lecture of the Institute of Medicine of Chicago will be given, November 27, at the City Club by Dr. Rufus I. Cole of the Rockefeller Institute for Medical Research, New York. Dr. Cole will speak on "The Nature of Pneumonia."

Course in Oxygen Therapy.—The Michael Reese Hospital will conduct a course on oxygen therapy, November 17-20. There will be lectures, discussion and demonstration of the principles and application of oxygen therapy, the use of carbon dioxide-oxygen mixtures in various conditions and the important types of oxygen therapy and resuscitation apparatus.

Society News.—The Chicago Surgical Society will hold a clinical meeting, November 6, at Presbyterian Hospital; the speakers will be Drs. Hillier L. Baker on "Reduction of Fracture Dislocation of the Epiphysis"; Edmund Andrews, "Etiology of Gallstones"; John D. Ellis, "Histology of Electrosurgical Wounds," and James T. Case, "Sarcoma of the Stomach."——The Chicago Pediatric Society was addressed by Dr. Silber C. Peacock (inaugural thesis) and Marie Werner and Charlotte Colwell on "A Scarlet Fever Survey of the Personnel of a Children's Hospital, Including Comparative Studies of Special Bacteriological and Serological Methods"; Drs. Maurice L. Blatt and Maurice L. Dale spoke on "Scarlet Fever Control," and Dr. John A. Bigler, Highland Park, "Effect of Tonsillectomy and Adenoidectomy on the Schick Reaction."——At a joint meeting of the Chicago Medical Society and the Central Association of Obstetricians and Gynecologists, October 28, in the Medical and Dental Arts Building, the program comprised papers by Drs. Fred L. Adair on "The White House Conference—General Facts and Its Activities"; Palmer Findley, Omaha, and William C. Danforth, Evanston, Ill., "Maternal Mortality"; Percy W. Toombs, Memphis, Tenn., and Frederick H. Falls, Chicago, "The Midwife Problem," and Jennings C. Litzenberg, Minneapolis, and Everett D. Plass, Iowa City, "Medical Education and Its Relation to the White House Conference."——At the fifty-fourth annual meeting of the Chicago Gynecological Society, October 16, Fay-Cooper Cole, Ph.D., spoke on "Ethnological Status of Woman," and Dr. Morris Fishbein, "Two Famous Women of the Nineteenth Century."

INDIANA

State Medical Election.—Dr. Franklin S. Crockett, La Fayette, was installed as president of the Indiana State Medical Association at its annual meeting in Indianapolis recently. Dr. Joseph H. Weinstein, Terre Haute, was chosen president-elect. Dr. Arthur F. Weyerbacher, Indianapolis, was elected treasurer to succeed Dr. William A. Doeppers, who retired from office with a certificate of merit for seven years' service. Mr. Thomas A. Hendricks, Indianapolis, was reelected executive secretary of the association. The next annual session of the society will be held in Michigan City, Sept. 27-29, 1932.

Society News.—Dr. Marlow W. Manion, Indianapolis, addressed the Daviess-Martin County Medical Society, October 13, on "Acute Inflammations of the Ear."——The Tri-County Medical Society was addressed, October 7, at North Vernon, by Dr. Elmer Funkhouser, Indianapolis, on "Common Diseases of the Heart."——The Lawrence County Medical Society was addressed, October 7, among others, by Dr. Norman R. Byers, Bedford, on "Use of Rectal Ether in Obstetrics."——Dr. Thurman B. Rice, Indianapolis, addressed the La Porte County Medical Society, October 15, in La Porte on "Recent Advances in Bacteriology."——The Indianapolis Medical Society was addressed, October 20, by Drs. Theodore D. Rhodes on "Effect of Combined Simultaneous Arsenobenzene Therapy on the Serological Reaction," and Thomas B. Noble, Jr., "Cellulitis of the Hand."——Boyd S. Gardner, D.D.S., Rochester, Minn., addressed the St. Joseph County Medical Society, October 14, at South Bend on "Relation of Dental Infection to Systemic Disease."——The Gibson County Medical Society was addressed in Princeton, October 12, by Drs. Vance A. Funk, Vincennes, on "Pelvic Inflammatory Disease," and Robert G. Moore, Vincennes, "Observations in Clinical Diagnosis of Pulmonary Diseases."——At the meeting of the Floyd County Medical Society, October 9, in New Albany, Dr. Percy R. Pierson spoke on "Sequelae Following Injury in Automobile Accident."——Pneumonia was the general subject for discussion at the meeting of the Hendricks County Medical Society, October 16.——Dr. Frank A. Van Sandt, Bloomfield, addressed the Greene County Medical Society, October 15, on "Uterine Hemorrhage."——Dr. M. Herbert Barker, Chicago, addressed the Lake County Medical Society at Gary, October 8, on "Management of Chronic Nephritis."

IOWA

Society News.—The Carroll County Medical Society was addressed, October 2, by Drs. Joseph B. Thornell and Jack J. Treynor, Council Bluffs, on "Kidney Diseases in Children."——Drs. George De Tarnowsky, Chicago, among others, addressed the Southeastern Iowa Medical Society, October 1, on "Treatment of Backache"; John C. McKitterick, Burlington, "Pediatric Problems," and Clarence L. Heald, Sigourney, "Surgical Drainage of the Abdomen." Dr. George J. Pearson, Burlington, was elected president of the society, and Dr. Ira N. Crow, Fairfield, secretary.——The Linn County

Medical Society, Cedar Rapids, will be addressed, November 12, by Drs. Sanford R. Gifford, Chicago, and Frederick W. Bailey, Cedar Rapids, on "Ocular Ailments of the Elderly Patient" and "Stone in Tonsil," respectively.——Dr. Joe M. Krigsten, Sioux City, addressed the Woodbury County Medical Society, October 2, on "The Choice of an Anesthetic."

LOUISIANA

Chaille Oration Given by Dr. Sistrunk.—The sixth Stanford E. Chaille Memorial Oration of the Orleans Parish Medical Society was delivered at the Hutchinson Memorial, Tulane University of Louisiana School of Medicine, New Orleans, October 26, by Dr. Walter E. Sistrunk, Jr., Dallas, Texas. His subject was "Chronic Streptococcic Infections of the Female Genital Tract"; this was a clinical and experimental study of their effect on the health of women.

Society News.—Dr. Theodore J. Dimitry addressed the Orleans Parish Medical Society, New Orleans, October 12, on "Chaulmoogra Oil in Eye, Ear, Nose and Throat," and Dr. Sidney M. Copland spoke on "Clinical Concepts of Heart Failure." —— Dr. Oscar W. Bethea, New Orleans, recently addressed the Lafourche Parish Medical Society on "Recent Advances in Diagnosis." —— The Eighth District Medical Society, Alexandria, was addressed, October 7, by Drs. Daniel N. Silverman, New Orleans, on diseases of the gastro-intestinal tract and ulcers of the stomach; Willis C. Campbell, Memphis, ununited fractures, and Oscar W. Bethea, New Orleans, angina pectoris.

MASSACHUSETTS

Appointments at Tufts.—Dr. Edward K. Ellis, assistant professor of ophthalmology at Tufts College Medical School, has been appointed full professor and Dr. Allen Greenwood has been made professor emeritus of the department. Mario Garcia Banus, D.Sc., has been promoted to associate professor of physiology.

Personal.—Dr. Daniel J. Hurley, Boston, has been appointed a member of the state board of registration in medicine to succeed Frank M. Vaughan, D.O., whose term expired.—— Dr. Frank H. Lahey, Boston, was elected president of the New England Surgical Society at its meeting in Portland, Maine, September 11, and Dr. Carl M. Robinson, Portland, vice president.

Society News.—The New England Heart Association plans to give a series of monthly discussions on cardiovascular disease; the first meeting, November 4, will be addressed by Sir Thomas Lewis, London, England, and Dr. James C. White on "Raynaud's Disease."——Dr. John Sproull, Haverhill, addressed the New England Roentgen Ray Society, October 16, on "Roentgen Study of the Great Vessels."

Mental Hygiene Meeting.—The Massachusetts Society for Mental Hygiene will hold its annual meeting, November 19, at the Twentieth Century Club, 3 Joy Street, Boston. Included on the program will be Dr. Clarence M. Hincks, director, National Committee for Mental Hygiene, New York, whose subject will be "Newer Trends in Mental Hygiene," and Dr. Douglas A. Thom, Boston, director, division of mental hygiene, state department of mental diseases, "Mental Hygiene and the Present-Day Depression."

Health at Lowell.—Telegraphic reports to the U. S. Department of Commerce from eighty-two cities with a total population of 36 million, for the week ended October 17, indicate that the highest mortality rate (17.1) appears for Lowell and the rate for the group of cities as a whole, 10. The death rate for Lowell for the corresponding week of last year was 15.5 and for the group of cities, 10.9. The annual rate for the eighty-two cities was 12 for the forty-two weeks of 1931 as against a rate of 11.9 for the corresponding weeks of 1930. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

MICHIGAN

Appointments to State Medical Board.—Dr. J. Earl McIntyre, Lansing, was recently elected president of the Michigan State Board of Registration in Medicine; Dr. Jacob D. Brook, Grandville, vice president, and Dr. Nelson McLaughlin, Detroit, secretary. With the exception of the appointment of Dr. Claude R. Keyport, Grayling, as member to succeed Dr. William H. Marshall, Flint, resigned, all other members of the board were reappointed.

Society News.—Dr. Walter E. King, Detroit, addressed the St. Clair County Medical Society, Port Huron, October 6, on "Gas Gangrene Bacillus Infection in Civil Life."——Dr. Kellogg Speed, Chicago, addressed the Oakland County Medical Society, Pontiac, October 15, on "Unhappy Results in the Treatment of Fractures."——Newton W. Larkum of the state department of health, Lansing, addressed the Gratiot-Isabella-Clare County Medical Society, October 15, on bacteriophage. —— Among others, Dr. Robert H. Denham, Grand Rapids, discussed "Management of Some Common Fractures" before the Ionia-Montcalm Counties Medical Society, October 13.—— The October meeting of the Shiawassee County Medical Society was addressed by Dr. Clarence D. Barrett of the state department of health, Lansing, on infantile paralysis.——Dr. Charles L. Brown, Ann Arbor, addressed the Kalamazoo Academy of Medicine, October 20, on "Histamine in the Study of Gastric Secretion and Disorders of the Stomach."

Societies Plan Care of Indigent Poor.—The Muskegon County Medical Society recently presented a plan providing for the care of indigent poor to the health and welfare committee of the board of supervisors, which is estimated to save the county $10,000 a year over the hospitalization cost at Ann Arbor. According to the newspapers, the medical society, under the plan, would give all medical and surgical care for the county's patients at $10,000 a year per 200 patients. The cost would be on a ratio basis depending on the number treated. The society would appoint a director who would assign members to the tasks in regular order. No part of the $10,000 would go to any individual physician but would go to the society. It was said that the hospitals had agreed on a flat rate of $4.50; when a patient was dismissed, he could be brought back for periodic treatments at 50 cents a day, it was stated. In presenting the plan, Dr. Louis LeFevre acted as spokesman for the society. It was reported that Genesee and Wexford counties had adopted similar plans. In Ingham County, the indigent poor would be cared for at a free clinic, according to the proposed plan of the Ingham County Medical Society as reported in the newspapers. This plan is also under consideration by council members.

MINNESOTA

Society News.—At the thirteenth annual reunion of the Association of Resident and Ex-Resident Physicians of the Mayo Clinic and Mayo Foundation, in Rochester, October 9, a silver platter was presented to Dr. William J. Mayo in honor of his seventieth birthday. The annual session was brought to a close with the presidential speech of Dr. James I. Scarborough, Little Rock, Ark., on "Ethics and Economics in Medicine." Officers for the ensuing year are Drs. Egerton L. Crispin, Los Angeles, president; Thomas J. Kinsella, Oak Terrace, secretary, reelected, and Porter P. Vinson, Rochester, associate secretary and treasurer, reelected.

"Lecturer" Lally Forfeits Bond.—A complaint was filed in the municipal court in Minneapolis, September 14, alleging that one John Hugh Lally had practiced healing without a basic science certificate. Following a preliminary hearing, Lally's bail was set at $1,250. September 28, the day of the trial, counsel for the defendant informed the court that Lally had left for Detroit. The judge ordered that the defendant's bail be forfeited and a bench warrant issued for his arrest. Lally, who is said to be a lawyer, licensed in Illinois, has been touring the country giving health lectures (THE JOURNAL, Feb. 21, 1931, p. 620). He has been previously convicted of violating the medical laws in Chicago and in Winnipeg, Manit.

NEBRASKA

Society News.—Dr. Franklin G. Ebaugh, Denver, addressed the Elkhorn Valley Medical Society, Norfolk, August 26, on "Significance of Psychoneuroses in the General Practice of Medicine." —— Drs. Jacob N. Lande and William Jepson, Sioux City, Iowa, addressed the Madison Five Counties Medical Society, September 8, on "Premature Infants and Their Management" and "Increasing Responsibility of Surgery," respectively.——Dr. Ernest L. MacQuiddy, Omaha, addressed the Otoe County Medical Society, Nebraska City, September 14, on desensitization treatment for hay fever.——Dr. Robert A. Cooke, New York, addressed the Omaha-Douglas County Medical Society, October 15, on "Clinical Manifestations of Allergy."

NEW YORK

Society News.—Drs. John A. Conway, Hornell, and Arthur C. Morgan, Philadelphia, among others, addressed the annual meeting of the sixth district branch of the Medical Society of the State of New York, Waverly, September 22, on "Typhoid Carriers—Medical and Surgical Management" and "The Treatment of Cardiac Tragedies," respectively.

State Society Sponsors Broadcasts.—After two years of research and preparation, the committee on health examination

of the Medical Society of the State of New York has begun a year's program of radio broadcasts on the Columbia chain. The talks, which are to be given by physicians each Thursday at 11 o'clock, are concentrated on preclinical medicine. For this year they will deal with problems of women from childhood to old age. All fields of medicine will be covered, and the medical policy will be conservative, constructive, without special doctrine and strictly impersonal.

New York City

Friday Afternoon Lectures.—Recent lectures in the Friday afternoon series sponsored by the Medical Society of the County of Kings have been delivered by Drs. James T. Rugh, Philadelphia, October 16, on "Significance of Low Back Pain"; Robert A. Kilduffe, Atlantic City, October 23, "Serological Study of Syphilis," and George Baehr, October 30, "Presenile Vascular Diseases." The next two lectures will be given by Drs. George W. Holmes, Boston, November 6, "Use of X-Rays in Diseases of the Chest," and Francis C. Goldsborough, Buffalo, November 13, "Toxemias of Pregnancy."

Hospital Staff Appointments. — The Hospital for Joint Diseases announces that six positions on its general service are open, three to begin July 1, 1932, and three, Jan. 1, 1933, for two years' rotating service. At the completion of the two years, graduating interns are eligible for a residency in orthopedic surgery for eighteen months, the Frauenthal Travel Scholarship of $2,400 for six months' study in the United States and six months in Europe and the two Mr. and Mrs. Frederick Brown Research Fellowships of $2,400 each. Unmarried graduating students and graduates of class A medical schools are eligible. Applications should be hand-written and should be addressed to the director of the hospital, Madison Avenue, One Hundred and Twenty-Third Street to One Hundred and Twenty-Fourth Street.

Faculty Changes at Long Island College.—Appointments and promotions at Long Island College of Medicine were announced at the beginning of the fall session as follows:

New appointments:

Drs. Frank B. Cross and William H. Lohman, clinical medicine.
Dr. Walter A. Sherwood, clinical surgery.
Drs. O. Paul Humpstone and Sylvester J. McNamara, clinical obstetrics and gynecology.
Dr. Alfred Adler, Vienna, special lecturer in medical psychology.
Dr. Robert L. Moorhead, special lecturer in otolaryngology.
Dr. Joseph Raphael, assistant clinical professor of surgery.
Drs. Bernhard A. Fedde and Daniel M. McCarthy, assistant clinical professors of medicine.

Promotions:

Drs. Benjamin Kramer, Paul L. Parrish and Murray B. Gordon, professors of clinical pediatrics.
Drs. Edwin H. Fiske, Robert F. Barber and William Linder, professors of clinical surgery.
Drs. Charles A. Gordon and Joshua Ronsheim, professors of clinical obstetrics and gynecology.
Drs. Francis B. Doyle, George Kornfeld, Samuel G. Blum and Mervyn V. Armstrong, assistant professors of clinical obstetrics and gynecology.
Drs. DeForest T. Layton and George H. Lordi, assistant clinical professors of medicine.
Drs. Samuel Linder and William Wolfson, assistant clinical professors of surgery.
Dr. Edward E. Hicks, assistant clinical professor of neurology.
Dr. Silik H. Polayes, assistant professor in pathology.

The resignations of Drs. H. Sheridan Baketel, professor of preventive medicine and hygiene, and Alfred Potter, professor of dermatology, were announced. Each became professor emeritus in his department. Dr. Frank L. Babbott, Jr., was recently made president of the college.

NORTH DAKOTA

Society News.—Dr. Alexander Gibson, Winnipeg, Manit., addressed the Grand Forks District Medical Society, Grafton, September 16, on fractures.——Dr. Leonard W. Larson, Bismarck, addressed the Southwest District Medical Society, Mott, July 29, on diseases of the blood.

OHIO

Hospital News.—The state board of control has appropriated $40,000 for expansion of the Cleveland State Hospital as a consequence of the epidemic of typhoid which recently swept the institution. It was said that the hospital, which had been built to accommodate 1,700 patients, was actually housing 2,350 and that the overcrowding increased the difficulty in controlling the epidemic. Of the amount appropriated, $10,000 will be used for construction and equipment at Hawthorndon, $20,000 for remodeling wards at the Cleveland hospital, $5,000 for repairs to walls and roofs, and $5,000 for rewiring. Twelve deaths had occurred up to September 23 among the 125 patients stricken with typhoid.

Society News. — Dr. Virgil H. Hay, Lima, was elected president of the Northwestern Ohio Medical Association at its meeting in Marion, October 6. The spring session will be held in Lima.——Five concerts will be given by the Doctors' Orchestra of Akron during the coming season, one for the Summit County Medical Society and four for Akron hospitals. Dr. Alexander S. McCormick is director of the orchestra.——Drs. Robert B. Osgood, Boston, and George L. Lambright addressed the Cleveland Academy of Medicine, October 16, on "Diverticulitis" and "The Problem of Arthritis," respectively. ——Harry Sobotka, head of the department of biochemistry, Mount Sinai Hospital, New York, gave a special lecture at the Institute of Pathology, Cleveland, October 14, on "Bile Acids and Their Importance in Physiology and Pathology."——Dr. Arthur M. Culler addressed the Montgomery County Medical Society, Dayton, October 16, on "Changes in the Eyegrounds in Arteriosclerosis.——Dr. John A. Fisher, Cincinnati, addressed the Auglaize County Medical Society, St. Marys, October 8, on "Pathology, Diagnosis and Treatment of Genito-Urinary Obstruction."——Dr. William H. Ross, Brentwood, N. Y., addressed the Cincinnati Academy of Medicine, October 5, on "Changing Relations in Medicine."——Dr. John D. Osmond, Cleveland, discussed roentgen diagnosis of tumors of the stomach and intestine at a meeting of the Ashtabula County Medical Society, Ashtabula, October 13.——Dr. Frank Smithies, Chicago, addressed the Mahoning County Medical Society at Youngstown, October 27, on "Gastrorrhagia—Its Pathological and Clinical Significance and Its Management."

PENNSYLVANIA

Society News. — Dr. Simon W. Marick, among others, addressed the Pittsburgh Pediatric Society, October 23, on "Treatment of Chorea with Phenylethylhydantoin."——Arthur Isaac Kendall, Dr.P.H., Chicago, delivered an address on the isolation and cultivation of bacteria in the filtrable state, October 21, in Pittsburgh, under the auspices of the Pittsburgh Diagnostic Clinic.——Dr. Thomas Klein, Philadelphia, addressed the Berks County Medical Society, Reading, September 7, on cardiac failure.——Dr. Earl D. Osborne, Buffalo, addressed the Erie County Medical Society, in September, on the modern treatment of syphilis.

Philadelphia

Society News.—Dr. Stanley Cobb, Boston, addressed the Philadelphia Neurological Society, October 23, on "Etiological Factors in Convulsions."

Tuberculosis Campaign in High Schools.—Four thousand high school students will be examined during the current school year in a campaign for the discovery of tuberculosis in adolescents in Philadelphia. The campaign is under the joint auspices of the Philadelphia Health Council and Tuberculosis Committee, the board of education and the Henry Phipps Institute.

Hospital News. — Kensington Hospital for Women has undergone a reorganization restricting its activities to the study and treatment of diseases peculiar to women, the basis on which it was originally founded.——A new department of physical medicine was recently opened at Temple University Hospital under the direction of Dr. Frank H. Krusen, associate dean of the school of medicine. The department occupies a suite of eleven rooms.——The Wills Hospital has sold the site it has occupied for a hundred years and will celebrate its centenary in 1932 in a new building at Sixteenth and Spring Garden streets. According to present plans, the new structure will be eight stories high, with 200 beds. For the first time the hospital will have a number of rooms for private patients.

Changes in Faculty at University of Pennsylvania.—The following promotions in the University of Pennsylvania School of Medicine were announced at the opening of the autumn session:

Dr. Stuart Mudd, associate professor of bacteriology.
Drs. Donald M. Pillsbury, Roy G. Williams and Joseph Stokes, Jr., associate professors of dermatology and syphilology, anatomy and pediatrics, respectively.

In the graduate school of medicine the following were promoted:

Drs. Ralph Pemberton and William D. Stroud, professors of medicine and cardiology, respectively.
Drs. Edward W. Beach and Truman G. Schnabel, assistant professors of anesthesia and medicine, respectively.

Drs. Albert E. Roussel, professor of medicine, and James E. Talley, professor of cardiology, retired as emeritus professors in their respective departments. The appointments of Dr. Edward A. Strecker as professor of psychiatry and of Dr. Clarence R. O'Crowley as assistant professor of urology were announced in THE JOURNAL, October 3, p. 1011, and October 10, p. 1084.

SOUTH CAROLINA

Society News.—Drs. Julian D. Hart and Alfred R. Shands, Jr., Durham, N. C., addressed the Seventh District Medical Society, Sumter, September 24, on "Treatment of Chronic Empyema by Preliminary Tidal Irrigation by Thoracoplasty" and "Infection in and about the Hip Joint," respectively.——Among speakers at a meeting of the Second District Medical Society, Leesville, recently, were Bruce Mayne, D.P.H., Columbia, on malaria therapy in dementia paralytica; Drs. Charles V. Akin, Jr., Columbia, on his investigations of pellagra in the state, and Orlando B. Mayer, Columbia, clinical aspects of gastric ptosis.——Drs. Marion H. and Hugh E. Wyman addressed the Columbia Medical Society, August 10, on "Urinary Obstruction" and Dr. James E. Boone, on "Importance of Urological Investigation."

WISCONSIN

License Revoked.—The license of Dr. Arne W. Matheson, Neillsville, was revoked, June 30, after he had been fined $500 for having performed an illegal operation, according to the state board of medical examiners.

Bureau of Blood Donors.—The Medical Society of Milwaukee will inaugurate a bureau of blood donors for the service of all Milwaukee hospitals, November 1. The hospitals will do the laboratory work of typing the blood and testing it for venereal disease. Donors are then to be registered with the bureau, which will locate them immediately on call from a hospital. Records will be kept to show how often the blood of each donor is used. The bureau will be operated in connection with the telephone service owned by the society.

Society News.—A program on medical economics was held by the Medical Society of Milwaukee County, October 14; speakers were Mr. Hugh W. Grove of the First Wisconsin Trust Company, on "Safe Investments" and Mr. Robert R. Aurner, professor of business administration, University of Wisconsin, Madison, on "Putting Simple Business Methods into the Doctor's Office."——The Rock County Medical Society has formed a cooperative organization to conduct free county medical clinics for persons unable to meet the cost of medical service. Members are to specify the type of cases they prefer to handle and groups will be organized to assure even distribution of work. Clinics will probably be organized at Beloit and Janesville. The community chest in Beloit has been asked to finance the expenses of the clinic there. Dr. Wayne A. Munn, Janesville, is president of the clinic corporation.——Drs. Paul F. Doege, Marshfield, and Tobias L. Birnberg, St. Paul, addressed the ninth councilor district medical society, Wausau, September 30, on endometritis and medical problems in Russia, respectively.

GENERAL

Examinations in Otolaryngology.—Thirty-four candidates passed the examination held by the American Board of Otolaryngology, at French Lick, Ind., September 12, the secretary reports. Nine failed or were conditioned. The next examination will be held in New Orleans, May 9, preceding the annual session of the American Medical Association. Prospective candidates should write to the secretary, Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb., for application blanks.

Accidents in the Home.—Nearly a third of the fatal accidents that occur in the United States each year arise out of hazards in the home. Among industrial policyholders of the Metropolitan Life Insurance Company, the death rate from domestic injuries in 1925 was 14 per hundred thousand and by 1930 it had been reduced only to 13.3. The slight decrease was attributed to a decline in mortality from accidental burns and gas poisoning. On the other hand, fatal accidental falls in the home have increased 40 per cent in the past five years, analysis of the insurance company's figures show. The largest proportion of fatalities from falls result from tripping on stairs. The decline in the number of burns and scalds is believed to reflect the installation of safe heating facilities in homes and the similar decrease in gas poisonings is ascribed to improvements in gas appliances. These three major hazards account for 73 per cent of the home fatalities reported each year, according to this study.

Report on Experiment with Middle-Rate Plan.—In March, 1930, a plan was inaugurated by the Massachusetts General Hospital, Boston, to care for persons of moderate means in the Baker Memorial Pavilion. The Julius Rosenwald Fund, Chicago, cooperated to meet half the deficit in the first three experimental years. Once fully established, the service is expected to be self-supporting. During the first year's operation, nearly 2,500 patients were treated, representing the lower-salaried professional groups. The average family income was $2,500. The total average cost paid by patients under the middle-rate plan averaged $173, the average length of stay in the hospital being 13 days. The average was made higher by a few instances of prolonged illness, one of more than six months with a bill of $1,769. The patient receives only one bill, which includes the physician's fee and all other charges. The hospital collects the whole bill and turns over the fee to the physician in charge of the patient. Provision is made for instalment payment. The purpose is to minimize the cost of hospitalized illness, including the fees for physician and special nurse, by consolidating costs, furnishing service on a sufficiently large scale to permit economy in administration, and offering it without profit and without charity.

Society News.—The eightieth annual meeting of the American Pharmaceutical Association will be held in Toronto, Aug. 22-27, 1932, jointly with the Canadian Pharmaceutical Association.——The annual convention of the American Association for Hygiene and Baths will be held in Detroit, November 6-7, under the auspices of the Detroit Department of Health with the cooperation of the Michigan State Department of Health. There will be symposiums on "The Place of the Swimming Pool and Its Program in the Community," "Medical Aspects of Pool Sanitation" and state regulations of swimming pools. Dr. Joseph E. Gichner, Baltimore, is president of the association.——Dr. Frank H. Ewerhardt, St. Louis, was installed as president of the American Congress of Physical Therapy at its session in Omaha, October 7; Dr. Gustav Kolischer, Chicago, was made president-elect, and Dr. Frederick B. Balmer, Chicago, elected secretary. The next annual session will be held at New York.——The next annual meeting of the American Dermatological Association, Incorporated, will be held in Havana, Cuba, May 3-5, 1932, with headquarters at the National Hotel.——At the recent meeting of the American Academy of Physical Therapy, Montreal, Dr. William F. Roberts, Saint John, N. B., was elected president. Vice presidents elected are Drs. Grant E. Ward, Baltimore, and Vernon C. Stewart, Woburn, Mass.——The annual meeting of the Central Society for Clinical Research will be held in Chicago, November 20. Dr. Lawrence D. Thompson, St. Louis, is secretary of the society.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hospital for Joint Diseases, New York, $5,000 by the will of Joseph L. Graf.

Montefiore Hospital, $300,000; the Solomon and Betty Loeb Hospital Home for Convalescents, $25,000, and the Babies' Hospital, $25,000, all of New York, by the will of the late Jacob Schiff.

New York Hospital, $21,691,593, and Nassau Hospital, $657,321, from the residuary estate of the late Payne Whitney.

Montefiore Hospital, New York, $5,000 by the will of the late Charles F. Louis.

Ossining Hospital Association, $10,000 by the will of the late Frederick M. Hilton.

St. Philip Hospital, Richmond, Va., $144,114.66, from the late Martha Allen Wise.

St. Louis Children's Hospital, $5,000 by the will of the late Mrs. Katherine Burnes Gatch, St. Louis.

Methodist Episcopal Hospital, Philadelphia, $5,000 by the will of Miss Emily Bell.

Manhattan Eye, Ear and Throat Hospital, New York, $75,984 under the will of the late Otto M. Eidlitz.

Passaic Hospital Association, Passaic, N. J., $5,000 by the will of Robert Dixon Benson.

Truesdale Hospital, Fall River, Mass., $25,000, bequeathed by the late Mary Brayton.

Wyckoff Heights Hospital, Brooklyn, $10,000 by the will of the late Katharine Quick Nissen.

Caledonian Hospital, Brooklyn, $7,500 by the will of the late David Reid, Old Greenwich, Conn.

New York Association for the Blind, $5,000 by the will of the late Mrs. Anne K. Smith.

Mary Hitchcock Memorial Hospital, Hanover, N. H., $125,000, and Rockingham General Hospital, Bellows Falls, Vt., $5,000 by the will of Charles N. Vilas, Alstead, N. H.

Portsmouth Hospital, Portsmouth, N. H., $1,000 by the will of Miss Eleanor B. Haven, Lancaster, Mass.

Newport Hospital, Newport, R. I., $20,000 from the estate of Ellen F. Mason.

Pennsylvania Hospital, Philadelphia, $5,000 by the will of the late Mary Jane Witham.

University of Pennsylvania and Pennsylvania Hospital, Philadelphia, $39,850 from the estate of the late Mrs. Sophia K. Garvin.

Philadelphia Home for Incurables, $67,000 from the estate of Thomas D. Mowlds, Ardmore.

National Committee Establishes Division of Education.—The establishment of a new division to promote psychiatric education and to develop trained personnel to meet the needs of expanding psychiatric and mental hygiene activities in the United States is announced by the National Committee for Mental Hygiene, New York. The new division plans to work out methods for recruiting and training psychiatric and mental hygiene personnel; to secure more qualified candidates for such work; to appraise and assist in the development of existing educational facilities; to study the programs now followed in medical schools in the teaching of psychiatry; to

administer fellowships and to assist in placing trained personnel in university, hospital and community mental hygiene work. Its work will be centered largely around medical schools with the twofold purpose of attracting medical students to the specialty of psychiatry and of imparting a working knowledge of the subject to the medical profession in general. Dr. Ralph A. Noble, Sydney, Australia, will be in active charge of the division and Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, Denver, and director of the Colorado State Psychopathic Hospital, on leave of absence for a year, will assist in conducting surveys and studies. The new division is established with the aid of the Commonwealth Fund, the New York Foundation and the American Foundation for Mental Hygiene, according to the announcement from Dr. Clarence M. Hincks, general director of the national committee. An advisory committee to guide the development of the program has been formed with the following membership: Drs. Adolf Meyer, Baltimore, chairman, Albert M. Barrett, Ann Arbor, Mich., Earl D. Bond, Philadelphia, C. Macfie Campbell, Boston, Clarence O. Cheney, New York, Lawson G. Lowrey, New York, Maurice H. Rees, Denver, Arthur H. Ruggles, Providence, R. I., and William L. Russell, White Plains, N. Y.

CANADA

Personal.—Dr. Frederick G. Banting, professor of medical research, University of Toronto Faculty of Medicine, received the honorary degree of doctor of science at the annual convocation of the University of the State of New York, Albany, October 15. The degree was conferred by Frank P. Graves, state commissioner of education.

University News.—Dr. P. Calixte Dagneau, Quebec, has been appointed to the staff of Laval University to succeed the late Dr. E. T. Arthur Simard. He will give courses in external pathology and surgical clinics.——Sir Charles S. Sherrington, Waynflete professor of physiology at Oxford, has been awarded the Charles Mickle Fellowship by the University of Toronto in recognition of his research on the brain and nervous system. This fellowship, which is the annual income from an endowment of $25,000, established by the late Dr. W. J. Mickle, is given annually to the member of the medical profession who is believed to have done most during the preceding ten years to advance practical knowledge of medical art or science.

Society News.—Dr. John Harris McPhedran delivered his inaugural address as president of the Toronto Academy of Medicine at the annual meeting, October 6, on "The Varied Interests, Activities and Responsibilities of the Academy of Medicine, Toronto." At a special meeting of the academy, October 23, William Wright, professor of anatomy, University of London, presented "A Lecture on Anatomy as It Would Have Been Given by Andreas Vesalius" and George A. Buckmaster, professor of physiology, University of Bristol, "Reminiscences of the Founders of English Physiology."——Drs. John S. Burris, Kamloops, B. C., and Alexander S. Lamb, Vancouver, addressed the Vancouver Medical Association, October 6, on surgical treatment and home treatment, respectively, of tuberculosis. Drs. Harold A. DesBrisay and William T. Lockhart will address the society, November 3, on "Syphilis in Medical Practice" and "Treatment of Syphilis," respectively.

Provincial Medical Meetings.—The annual meeting of the Manitoba Medical Association was held at Brandon, September 9-10. Among the speakers were Drs. Alexander Primrose, Toronto, on malignant disease; George F. Strong, Vancouver, cardiac irregularities, and Theodore H. Lennie, Vancouver, management of toxic goiter. A symposium on mental conditions was conducted at the Brandon Mental Hospital. Dr. Rosslyn B. Mitchell, Winnipeg, was elected president.——The annual meeting of the Province of Quebec Medical Association, Quebec, September 10, took the form of a "clinical day," with clinics at the Hôpital Saint-Sacrement and Hôtel-Dieu. Following these, addresses were delivered by Prof. E. Sergent of the University of Paris, on pulmonary cancer, and Dr. Edward W. Archibald of McGill University, on indications for phrenicectomy in pulmonary disease. Dr. Joseph R. Belisle, Hull, was elected president for 1932.——At the recent annual meeting of the Prince Edward Island Medical Society, Drs. William B. Hendry and George S. Young, Toronto, were among the speakers; their subjects were "Antenatal and Postnatal Care in Obstetrics" and "Mental Aspects of Disease," respectively.

Deaths in Other Countries

Arthur Schnitzler, Vienna, Austria, also a novelist, poet and dramatist, aged 69, October 21, of heart disease.——**Prof. Constantin von Economo,** Vienna, known for his work on epidemic encephalitis, October 21, aged 55, of heart disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 10, 1931.

Refusal of British Medical Association to Accept the Economy Proposal

In a previous letter to THE JOURNAL it was stated that the Insurance Acts Committee of the British Medical Association aquiesced in a cut of about 11 per cent in the capitation fee of panel physicians as part of the economy proposals of the national government, rendered necessary by socialistic expenditure. The committee was assured that the government was determined to stand or fall by the whole of its economy proposals and this led the committee to think that the wise course was to submit to the reduction. However, in consequence of protests the government subsequently varied its proposals, as they affected teachers, the defense forces and the police. The committee held this to be a breach of faith and informed the government that the matter would have to be reconsidered. The government then stated that it would substitute for its original proposals an all round reduction of 10 per cent for the various services. The committee requested that before making the 10 per cent reduction an allowance be made for the expenses of practice; in other words, to make the percentage reduction on the capitation fee on the net and not the gross earnings. The government replied that when it altered the proposals for the other services it thought it was only fair that a maximum cut of 10 per cent which it finally determined for other services should also be applied to the medical service, but that while most anxious that the services called for should be equitable between the classes affected, it was impossible to secure precise equality owing to wide variations in conditions of service. If the claims for making allowances for expenses were admitted, they would be put forward by others besides physicians. The government could not accept the proposal and hoped that physicians would continue "to show the same spirit of readiness to assist the national cause" as they had done. However, the committee replied that it could not accept, and held that physicians were being unequally dealt with as compared with other bodies. Panel committees were therefore requested to hold meetings of physicians to instruct their representatives for a conference, which will be held.

The Population Problem

At the meeting of the British Association for the Advancement of Science, Prof. Edwin Cannan, president of the Section of Economics, described the changed outlook since a century ago, when Malthus still lived. No one attached much importance then to his doctrine that population tended to outgrow the means of subsistence. But economic history brought about an almost complete reversal of these views. For one thing the ratio of births to marriages showed an almost steady decrease from 4.36 to 2.14, and our population now showed a tendency to become stationary or to decrease. Emphasis on food had changed, as it was realized that food could be grown more rapidly than the demand for it. Is cessation of the growth of population good or evil? The limitations of economics and perhaps of human nature prevent any straight answer.

Prof. Julian S. Huxley said that the possibility of migration on a large scale was rapidly coming to an end. So too was that of rapid expansion in many countries, for example, India, China, Britain and Belgium, under the economic conditions existing. The deliberate prevention of conception by large sections of the population was a new phenomenon of the first magnitude, which was not unlikely to affect all countries in the coming century, with a resulting danger of depopulation. Owing to the progress of medicine and to social services, natural selection was not nearly so rigorous and if, as appeared, most muta-

tions were deleterious, means must be found of introducing artificial selection if degeneration was to be prevented. The problem of human population had reached a stage at which scientific study and control were urgently required, as regards both quantity and quality.

Prof. A. M. Carr-Saunders estimated the world population in 1650 at 465 millions; in 1750, at 660; in 1800, at 840; in 1850, at 1,100, and at the present time, at about 1,900. In those two and one-half centuries predominance in race increase passed from the Asiatic to the European races, which still retained it. During the last sixty years the birth rate had declined among every people of European descent. We were no longer reproducing our population, and the United States was only just doing so.

Prof. L. T. Hogben doubted whether experimental biology was able to provide any new formula to replace the malthusian doctrine (notwithstanding Malthus's defective mathematics). Economists and statisticians favored the view that the decline of the European birth rate was due to contraceptive measures. But he did not believe that the decline of the English birth rate was due almost exclusively to this. It might be largely due to abstention, to changes in diet and social hygiene, and to economic prudence. Western Europe was faced with a decline of population and not merely of birth rate. Once the decline had begun, it was difficult to say how far it might go before means of arresting it were found.

Air Pollution by Smoke

In his address to the annual conference of the National Smoke Abatement Society, the president, Dr. H. A. des Voeux, said that excessive smoke was not a necessity, but a luxury of laziness which should not be allowed by authorities charged with the protection of the health of the people. The local authorities were working in conjunction with the Department of Scientific and Industrial Research, which was investigating the impurities of the atmosphere. In the square mile of the city of London, 150 tons of dirt fell in 1911, while in 1930 the figure was 380 tons. Similar figures were obtainable from other large centers. The destructive element in the combustion of coal was now known to be sulphur dioxide, which was turned into sulphuric acid in the air. The report on the disastrous fogs in the Meuse valley last winter stated definitely that the deaths were due to suffocation, which might easily be reproduced in closely inhabited neighborhoods had not the government been forewarned in time to insist that measures must be taken to prevent the escape of this gas into the air, or to neutralize it before it escaped. At the new electric station being erected at Battersea (in London) the enormous amount of 2,000 tons of coal would be burned daily, emitting at the smallest calculation 30 tons of sulphur, which is equivalent to 90 tons of sulphuric acid. Imagine the effect of this acid accumulating, as it well might, for four or five days on the unfortunate population of closely packed Battersea. But in speaking of factory smoke he did not minimize the effect of the domestic chimney, especially the kitchen range. But the domestic chimney could not be abolished until smokeless fuel could be produced at the price the poor could afford.

A report was presented by the Greater London Joint Smoke Abatement Committee, regretting that no satisfactory method of measuring the density of smoke had yet been evolved. The subject was still receiving the attention of the government fuel research station. Great progress had been made in London in connection with the control of smoke emission. Beneficial effects were being secured under the law which prohibited the emission of black smoke for more than three minutes in thirty, but the committee was still not satisfied and regarded a two minute period as necessary, which it hoped would be in force in 1936.

Memorial to James Mackenzie

In the Lancashire manufacturing town of Burnley, James Mackenzie followed for many years the career of a general practitioner and at the same time laid the foundation of modern cardiology. It is fitting that, at Lord Moynihan's suggestion, a plaque has been placed on the house where he lived and a bust placed in the public park. The plaque bears the inscription: "Sir James Mackenzie, M.D., LL.D., F.R.S., F.R.C.P., 1853-1925. Who achieved fame by his researches in connection with diseases of the heart, was from 1879 to 1907 a general practitioner in Burnley and lived in this house." In unveiling the bust, Lord Moynihan described Mackenzie as "perhaps the greatest general practitioner we have ever produced, and who was certainly possessed of the most acute and original mind of any physician who has practiced in this country during the last fifty years." Like Hippocrates, his eye saw things which escaped the observation of others. His greatest work was concerned with disease of the heart, but a philosopher might claim that his method of work was even greater than his results. He vindicated the hippocratic method, the method of accurate clinical observation leading to wide generalization. He rather disdained the academic scholar, the learned collector of other men's opinions. His invention of the polygraph, a feat acclaimed throughout the world, enabled him to read the heart's action as in a book. Many of his disciples failed to understand the real significance and philosophic basis of his work. So after years of consulting work in London he went back to general practice and established the institute at St. Andrew's for the study of disease in its early stage.

PARIS

(From Our Regular Correspondent)

Sept. 23, 1931.

The Third International Congress of Radiology

A number of international congresses were held in Paris during August and September, in connection with the Colonial Exposition. Their transactions represented, for the most part, a recapitulation of the present status of scientific research and did not bring any sensational discoveries. The Congress of Radiology brought together 1,300 roentgenologists from all parts of the world. The attendance would have been much greater if the German contingent had not stayed away on account of the economic crisis and the urgent request that no one leave Germany, unless absolutely necessary, in order not to aggravate the financial situation by the withdrawal of money from the country. The congress, held at the Sorbonne, was presided over by Dr. Antoine Béclère, in the presence of the minister of public health. On this occasion, diplomas honoris causa were presented to Dr. Béclère by the Royal Society of Radiology of London, and by Professor Schinz in the name of the University of Zurich; two gavels also were presented to him, one made from the tooth of a mammoth, and the other of ebony, set with a diamond, the donors being respectively Professor Forssell of Stockholm, former president of the congress, and Dr. Pfahler, in the name of the American College of Radiology. Madame Curie was likewise presented with a gold medal by the American College of Radiology. The duc de Broglie, chairman of the committee on standards of measurement, gave an account of the work of the committee charged with matters of precision in connection with the international acceptance of the units previously adopted at Stockholm. Dr. Ledoux-Lebard, general secretary of the congress, read then the recommendations proposed by the committee against the dangerous effects of various rays and radioactive substances. The next congress will meet at Zurich in 1934 under the chairmanship of Professor Schinz. Professor Forssell gave a survey of the present status of the use of irradiations in the treatment of cancer. He estimates that only a third of cancer sufferers present themselves to the surgeon in a state of operability, the result of which is that surgery is able to cure only one tenth of cancerous persons, so that 90 per cent of them require treatment other than surgery. In about 50 per cent, the radiotherapeutic methods are capable of bringing considerable relief, objectively and subjectively. In

from 15 to 20 per cent of the total number of cancerous patients they effect a disappearance of the symptoms for periods of varying length. In certain localizations of cancer, radiotherapy gives results superior to those of surgery, from the standpoint of permanent recovery, which entitles it to preference not only in operable but also in inoperable cases. Dr. Lewis G. Cole of New York spoke on the radiologic exploration of the intestinal mucosa, of the preparation of the patient for this examination, and of the interpretation of the roentgenograms. Dr. Lynham of London read a paper on the preoperative and postoperative treatment of cancer of the breast by means of irradiations. He reported 57,000 deaths due in England to this form of cancer during the previous ten years, death resulting usually from metastases. He explained his method of combining radiotherapeutic treatment with surgical intervention. Buisson of Turin suggested applying systematically castration by means of roentgen rays to women affected with pulmonary, peritoneal and adnexal tuberculosis, associated with menstrual disorders. Palumbo of Florence spoke on the physical doses and the biologic doses in radium therapy, the latter being the more important for the result but at the same time the more difficult to measure, as they vary with the individual patient, the erythema dose serving always as a basis. Auclair and Halphen reported the results of research carried out in the Hôpital Rothschild, on the use of artificial fever, in the treatment of dementia paralytica, chronic rheumatism, and radioresistant cancers (combined with radium therapy); they utilize concurrently the American types of apparatus introduced by Neymann and by Carpenter. Mehrabian of Teheran discussed the use of roentgen rays and of ultraviolet rays in the treatment of visceral tuberculosis and tuberculosis of the bone. Sarrand and Belot considered the value of roentgenotherapy in exophthalmic goiter. A huge exhibit of radiologic apparatus was held during the congress. There was exhibited a giant apparatus, of French construction, for the application of high voltage roentgen therapy, capable of producing 700,000 volts. Since, thus far, no tube has been constructed capable of supporting such a potential, the apparatus is used to supply two or three tubes with a capacity of 400,000 volts. It is employed at the anticancer center of Villejuif, near Paris, which is under the direction of Professor Roussy.

Privileges Demanded for Physicians' Automobiles

The difficulties of traffic in large cities, which result from the constant increase in automobiles in circulation, have obliged the authorities to adopt severe measures to prevent the blocking of traffic, which is due often to the parking of vehicles along the sidewalks. But the duration of the parking privilege, in the center of Paris, is limited to a few minutes, and applies to only one side of the street, the parking side alternating each day from one side of the street to the other. The ordinance is enforced strictly by the police. For longer periods (if one knows in advance) a car must be parked in certain places reserved for the purpose, and these are often some distance away. This ordinance works hardship on physicians, since, in visiting a patient, they cannot know in advance the duration of their consultation. Paris physicians having had numerous fines imposed on them by policemen who interpret their orders slavishly, a protest was made to the prefect of police in the name of the medical syndicate, in order that a physician might be given the privilege of parking his automobile in front of a patient's residence as long as the exigencies of the case require. It has been proposed that an enameled plaque bearing the insignia of the Red Cross be placed by the prefecture of police on all the vehicles of physicians, in order that they may be thus protected against the fines imposed by policemen.

News Items

The Clinic of the American Legion was recently opened in Paris, in the villa Eugêne-Manuel, at Passy, for the care of Americans residing in Paris. Dr. Alexander Bruno, of the Royal College of Surgeons, is the director of the new institution, who will be aided by many well known practitioners: Drs. Herman, Hiller, Letulle, Busy, Gourliau.

Mr. Robert Davis, director of the American Library, has been appointed general manager of the American Hospital in Paris. He succeeds Major Claflin Davis, who resigned for reasons of health. Major Davis was called in April, 1930, to the management of the hospital; he was previously engaged in the practice of law in Boston. During the war, he took part in the work of the Red Cross in the East. He had been director of the St. Lukes Hospital in Bethlehem, Palestine, before assuming management of the American Hospital in Paris. Mr. Robert Davis, who succeeds him, has resided many years in Bordeaux.

In the hotel Phare de France, the Franco-American institution for the reeducation of the war-blinded, located in Paris, rue Daru, Miss Genevieve Tyler, who has served as director of this institution for ten years, received the cross of the Legion of Honor from the hands of General Gouraud, military governor of Paris. The presentation was attended by French and American notables.

BERLIN

(From Our Regular Correspondent)

Sept. 14, 1931.

The Decline of Social Hygiene

The catastrophe which the present financial crisis really is in its practical effects on movements requiring the expenditure of public funds is not fully understood by all. A few examples give a picture of the bad hygienic conditions prevailing in certain quarters owing to the lack of public funds. The crisis that broke in July brought disastrous consequences to the work of the public welfare department. For example, two decrees of the director of a Prussian province state that considerable limitation of the expenditures for the care of cripples will be necessary, and that no further cripples can be admitted at present to institutional care. Likewise, even tuberculous persons can receive consideration only in especially urgent cases after special examination by an expert phthisiologist. It is possible that, because of the inability of the health authorities properly to care for the tuberculous, healthy persons in their environment may become contaminated, which with our present scientific knowledge and our perfected methods of organization might usually be prevented. The two decrees cited show how the two fields of sociohygienic work that heretofore have been regarded as the most important for the preservation of public health have been paralyzed. This may result not merely in a standstill of sociohygienic development but, which would be more disastrous, in the destruction of a delicate system that has been organized after much thought and labor. Von Hindenburg, the president of the reich, has said: "The preservation of the health of the German people is one of the most important duties of the government. Only a healthy German people will find its way out of the laborious present into a better future." In July, however, the government was forced practically to relinquish one of its most important duties. Through the welfare endeavors associated with free school lunches, these are closely connected with social hygiene. The conditions in this respect are again very bad. Parallel with the economic decline, the number of school children (for example, in Berlin) who go off to school without breakfast has increased by leaps and bounds. The reich and the states (*länder*) have withdrawn the former allowances to schools for food, and the allowances granted by the communes have been sharply reduced. The school physicians estimate that in Berlin there are 165,000 school children who are undernourished. Owing to the drastic cuts in the appropriations for free school lunches, at least 55,000 children in Berlin will remain undernourished.

Need of Cadavers for Anatomic Instruction

At the smaller universities it is often difficult to procure sufficient cadavers for anatomic instruction. In view of this lack, the University of Jena, acting in accord with the Thüringische Innen- und Volksbildungsministerium, has addressed a memorial to the people, in which it calls attention to the necessity of providing for the students of medicine better opportunities for the study of the human body on cadavers. The memorial takes a strong stand against the false conceptions that prevail concerning the treatment of dead bodies in the department of anatomy. It emphasizes that no bodies are multilated in the department, and that consequently a person who leaves instructions that his body shall be turned over, at his death, to the anatomic institute need have no fear of mutilation. It calls attention likewise to the fact that men such as Ernst Haeckel during their lifetime released their bodies for the purposes of anatomic study and thus performed a service for science and for their fellow men. In many cases it is certainly an advantage to study at the smaller universities. That is particularly true of medicine, in which the objective method and direct personal contacts are extremely important in many branches of the instruction. The significance of such an announcement as the foregoing should therefore not be exaggerated; there have always been in the past sufficient anatomic preparations.

Food Blockades and Disarmament

In the *Münchener medizinische Wochenschrift*, Prof. Karl Kisskalt, hygienist of Munich, publishes an article in which he describes briefly the misery caused by the food blockade during the World War and the period immediately following the armistice. In the Heil- und Pflegeanstalt Neustadt in Holstein, the records of which were studied by Kisskalt, 474 of the 800 inmates died in a single year. The death certificate gave cardiac degeneration as the cause of death, and necropsy showed complete absence of fat, but *starved* was not allowed to appear on the death certificate. Also many persons among the general population, who refused to buy anything from unauthorized pedlers, died of hunger, to mention only Gaffky, the director of the Institut für Infektionskrankheiten. The deaths resulting from the food blockade, during the war, are placed at 400,000.

Are wars in the future to be carried on in this manner? For the German physicians who went through such experiences during the World War, it was pleasing to learn that President Hoover said in his armistice address of Nov. 11, 1929: "The time has come when we must prevent using as a weapon of war the starvation of women and children." All our hopes must be directed toward bringing about the realization of this idea. Will anything be done in the near future? At the recent preliminary disarmament conference this idea did not find expression. At least, in the future, a food blockade established in time of war should not be extended beyond the signing of an armistice.

Therefore, the German physicians, who saw the suffering caused by the food blockade, must demand that the disarmament conference convening in 1932 adopt the following regulation: "The establishment of a food blockade, with a view to cutting off the food supply of a people consisting of noncombatants (namely, women and children), shall not be permitted as a war measure." But if the conscience of the present race of mankind is not sufficiently matured that one can expect the adoption of such a regulation, then, as a minimum expression of the great need, the following resolution should be passed: "When a city has surrendered or when the army of a country has surrendered its most important weapons, it shall, in the future, no longer be permissible to cut off the food supply of the population."

Death of Professor Grotjahn

Alfred Grotjahn, ordinarius in social hygiene at the University of Berlin, died, September 4, from an exacerbation of an old gallbladder disorder, at the age of 61. Grotjahn's position among the hygienists of the present day was unique. His researches were characterized by a combination of social science and medicine. After spending sixteen years in the practice of medicine, he received a call to the University of Berlin as the director of the newly established department for social hygiene in the Hygienisches Institut. It was doubtless the merit of his research in the field of social medicine that attracted attention and made him appear a suitable candidate. In 1920 he became the occupant of the first chair of social hygiene. In his earliest works (for example, "Alcoholism," "Changes in the Diet of the People," "Alcohol and Workshop," "Hospital Management" and "The Health Center Movement") he treated problems in which economics and public health were closely associated and in which he made extensive use of the results of statistics. The peak of his creative literary activity was reached with "Social Pathology" (1912), which to a certain extent unfolds a theory of social hygiene based on the systematically studied relations between disease and the social world about us, and which even today may be regarded as a milestone in the development of his system and as a standard work on social hygiene. In addition, Grotjahn was always an active student of demography and, more particularly, of birth decline and the problem of bodily degeneration; birth decline and birth control in the light of individual and social hygiene; the hygiene of the propagation of man, and other kindred subjects.

VIENNA

(From Our Regular Correspondent)

Sept. 23, 1931.

Early Diagnosis of Cancer of the Cervix Uteri

At the second Frauenklinik of the University of Vienna, a method has been used during the last eighteen months which makes it possible to recognize in the earliest stages one of the most frequent forms of cancer of the uterus. The portio is brought into view with the aid of a speculum and is painted with an aqueous solution of iodine. The normal mucous membrane is colored a deep brown in a few seconds, but if there is a cancerous area it remains colorless and thus forms a distinct contrast with the surrounding healthy tissues. With the aid of a magnifying apparatus introduced with the speculum, the tiniest spots awakening a suspicion of cancer by reason of their colorless appearance can be discovered. With a curet some of the tissues comprising the colorless spots are removed and examined microscopically. This diagnostic method is based on the observation that the normal cells of the uterine mucosa contain a form of sugar that is stainable with iodine, whereas the sugar substance, and hence the stainability, is absent if the epithelium becomes cornified or degenerates owing to the presence of cancer. The microscopic examination reveals whether the colorless condition of certain areas is due to harmless cornification or to a cancerous change. Dr. W. Schiller, a physician of the Frauenklinik, stated that this diagnostic method is now applied systematically to all women who are admitted to the clinic. In many cases it has been possible to discover an incipient cancer that would otherwise have escaped diagnosis, which enabled the examiner to recommend an operation that offered the most favorable prospects for a lasting cure. The method permits, for the present, only the diagnosis of cancer of the portio; that is, of a limited part of the genital tract. Nevertheless, the relative frequency of cancer of the portio region justifies the importance that is ascribed to this method in the Frauenklinik.

International Congress of Women Physicians

The sixth International Congress of Women Physicians, held in Vienna, September 17-20, was attended by a large number of women physicians from forty-seven different countries. A surprising feature was the considerable number of representatives from the Mediterranean countries and the Far East. After the welcome by the representatives of the government, the University of Vienna, the city of Vienna and the medical

societies, the transactions were opened with a paper by Madame Dr. Balfour on "The Condition of Women in India." The work of the congress covered two main topics: (1) the rôle of the woman physician in tropical countries, and (2) the legal protection of women workers from the sociohygienic point of view. Dr. Balfour discussed the evils to which women of India are exposed because of unenlightened religious customs, showing that often severe bodily injuries are traceable to religious observances. The woman physician plays an important part in combating such injuries. Madame Dr. Penell, a native of India, and Madame Dr. Dengel, a physician and missionary from the Punjab, described the lamentable situation of the women of India, and of Asiatic women in general; likewise, Madame Dr. Benson and Madame Butler-Adamson, two Anglo-Indians, outlined the sanitary conditions in India. They pointed out that the activities of the women in the hospitals in India are irreplaceable, since only British army physicians are otherwise to be found, to whom a native woman is reluctant to apply for medical aid. From the Congo region the congress received reliable accounts through Madame Dr. Rami, a Swiss physician, who described the poorly organized health service in this region, so far as women are concerned. Madame Dr. Jettmar reported from China that the League of Nations, in cooperation with the Chinese government, had created in recent years an organization that is promoting school hygiene and welfare work among infants, children and mothers. From Batavia Madame Dr. Van Made announced that the natives, and especially the women, are eager to take a course of treatment with arsphenamine, because the whole population has learned the good effects of such treatment in various diseases endemic in Java and in the archipelago in general. While serving as government physician, it had been her duty to travel through the country, on which journeys she would give upward of 200 injections of arsphenamine, and likewise inoculations against typhoid, cholera and smallpox. Reports from Algeria were presented by Madame Dr. Poli-Garnier and Madame Dr. Thuillier-Landry, who pointed out the many grave hygienic dangers incurred by women in that country.

For the second main topic of the congress many physicians presented themselves. After the paper offered by Frau Dr. Adler-Herzmark of Vienna, who discussed the methods of sociohygienic protection of workingwomen in Austria, Hungary, Germany, England, Netherlands, India, North America and Japan, a number of Italian, Swedish and English women physicians took the floor. There was a surprising diversity of opinion as to the protective measures that women needed. One group was made up of the women physicians of central and southern Europe, who agreed that women workers need legal protection against night work, overtime, work during periods preceding and following confinement, and also against injuries caused by certain types of work. The women physicians of northern Europe, however, were opposed to all protective laws, and advocated zealously the "open-door policy." In their opinion, the best protection for women is "Equal pay for equal work, for men and women." Certain points of the discussion deserve special mention; for example, the presentation of Madame Dr. Ella Lollini of Liguria, who described the operation in Italy of the prophylactic aid, for women, against tuberculosis, and likewise the statements of Madame Dr. Emilia Sorrentini of Rome, who explained the workings of the sick benefit funds in Italy, in which all persons gainfully employed are compelled to participate provided their earnings fall below 800 lire ($40) per month. The system includes old age insurance, disablement insurance, tuberculosis insurance, and (for the women members) motherhood insurance. A large number of congress members demanded improvements in working conditions from the hygienic point of view, including abolition of night work and home work. The northern representatives of the "open-door system" were equally energetic in their opposition to all such prohibitions. Frau Dr. Krüger of Dresden formulated the thesis that women are not better than men nor worse than men but that, being different from men, they require special protection, or, as the Italian physicians expressed themselves, the southern women cannot work so hard as northern women, for which reason they, at least, need protective laws. Dr. Balfour called attention to the fact that 250,000 women spinners in India work hard for from twelve to fourteen hours, without apparent injury; Dr. Adamson mentioned that, during the war, women in many countries did all kinds of "man's work," even working on night shifts, without any perceptible damage to their health.

The congress adopted several resolutions, in which the women physicians demanded the supervision of labor by specially trained physicians (male or female), a course in industrial hygiene obligatory for medical students, a far-reaching control of piece work done in the home, equal pay for equal work for men and women, and, finally, the appointment of a study committee looking toward the improvement of health conditions in tropical countries.

TURKEY

(From Our Regular Correspondent)

Ankara, Sept. 25, 1931.

The Importation of Mineral Waters

According to the general public health law, mineral waters for which permission to import has not been procured from the ministry of health and social assistance are not allowed to pass the customs unless there is evidence that such goods were shipped before April 1. Importers must therefore apply to the ministry for permission to import mineral waters which they have been importing, as well as for waters which they intend to import in the future.

Their applications must indicate (1) the commercial name of the mineral water and whether it is natural or artificial, and if natural whether any chemical has been added and, if so, the kind and amount of the chemical; (2) the name of the spring from which the water is taken, the name of the laboratory where it is prepared for sale and the name of the person in charge of the laboratory; (3) the wholesale and retail price of the water; (4) whether it is a mineral water that formerly has been imported and, if so, the date of its first import. The application should be accompanied by (1) official proof verified by a Turkish consulate that the mineral water in the country of its origin is by governmental permission sold there as a mineral water and under the same name; (2) a report of the analysis of the mineral water issued by a governmental and duly authorized laboratory of the country from which the mineral water is coming; (3) two samples each of the bottles and of the wrapping paper and labels or advertisement which may accompany the wrapping paper.

Emetine Provided by the State

In the southern provinces, amebic dysentery has lately been on the increase. The effective treatment of the disease there is largely prevented or retarded by the fact that, in comparison with the meager income of the natives, emetine there is expensive. The ministry of health and social assistance has therefore ordered the preparation of ampules of emetine for the gratuitous treatment of the indigent. The southern provinces became infected through the movement of troops and prisoners, among whom amebic dysentery epidemics occurred during the World War.

Control and Prevention of Syphilis

Of all health problems, the control of syphilis ranks second in importance. Special emphasis is being given, therefore, to the organization of a campaign. The public health law requires all health officers and physicians in the service of a municipality to give free care to persons applying who suffer from either syphilis or gonorrhea, regardless of their income, until they are cured or rendered permanently noninfectious. These

physicians are also required to give free medical care to any person suffering from venereal disease who has not applied for treatment but with whom in their professional work they come in contact; also to supervise disorderly houses and to give treatment to their inmates.

The ministry of health and social assistance organized its first syphilis and antivenereal campaign in 1925 in the provinces of Sivas and Bursa, which are considered heavily infected areas. Next a unit was organized in Ordu in Duzce and in Carsanba. The staff of a unit consists of a specialist who directs the laboratory, five specialists, one technician, one secretary, twelve sanitary inspectors and seven orderlies. Neoarsphenamine compounds of mercury and of bismuth, and all other medicaments are supplied free by the government. The expense incurred by syhilis and antivenereal work of the provincial and municipal health departments is to be covered by means of their special budget set aside each year for this purpose. The method of treatment is a routine one. The Wassermann, Meinicke, Sachs-Georgi and Kahn tests are made in suspected cases. Because of its advantages especially in rural communities, it would be feasible to make the Kahn test the standard.

Until 1928, 90,722 persons (47,748 women and 42,974 men) were examined at the Sivas unit, of whom 4,199 persons came under routine treatment. At the Bursa unit until 1928, 23,125 persons (12,221 women and 10,904 men) were examined, of whom 1,157 persons came under treatment. At the Ordu unit, which was not established until 1929, 5,342 persons (2,639 women and 2,703 men) were examined during that year, of whom 55 women and 114 men came under treatment.

According to statistics, the number of infected persons under treatment in all provinces for the year 1926 was 82,537 (44,013 women and 38,524 men); for 1927, 82,626 persons (42,904 women and 39,722 men); for 1928, 92,051 persons (48,135 women and 43,916 men); in 1929, 97,536 persons (48,784 women and 46,752 men).

Disorderly houses were tolerated until 1930. Heretofore disorderly houses and their inmates have been under the supervision of the municipal health departments. In 1927 there were in Istanbul 110 disorderly houses; 21 were ordered closed but they were replaced soon by 20 new ones. During the year 1927 there were in Istanbul 1,678 persons, of whom 993 were women and 685 men, under treatment at provincial and municipal departments. In 1930, the ministry of the interior ordered all disorderly houses closed and persons found guilty of enticing girls or women into prostitution deported if their nationality is other than Turkish.

Marriages

WILLARD H. TICE, Quakertown, Pa., to Miss Christine Lichtenwalner of Allentown, Pa., August 19.

JOSEPH SCATTERGOOD, JR., to Miss Eleanor F. Martindale, both of West Chester, Pa., October 17.

LAZARE MELVIN SHAPIRO, Madison, Wis., to Miss Rae Kovitz of Kansas City, Mo., June 7.

CHARLES PHILLIP MILLER, JR., Chicago, to Miss Florence Lowden, at Ottawa, Ill., October 20.

PAUL HERBERT ROEDER, Philadelphia, to Miss Elizabeth Acker of Devon, Pa., October 17.

W. EUGENE GRAHAM, Los Angeles, to Miss Louise Mitchell of Whittier, Calif., September 10.

SAMUEL H. JOHN to Miss Clara E. Jansen, both of Philadelphia, August 22.

FRANKLYN THORPE, Los Angeles, to Miss Mary Astor, June 29.

WILLIAM E. GRIEVE, Spokane, Wash., to Miss Erna Toevs, recently.

Deaths

John Whitridge Williams ✠ since 1899 professor of obstetrics, Johns Hopkins University School of Medicine, Baltimore, died, October 21, following an operation. Dr. Williams was born in Baltimore, Jan. 26, 1866, the son of Dr. Philip C. and Mary C. Whitridge Williams. He graduated from the Johns Hopkins University in 1886 and received his M.D. from the University of Maryland in 1888. After postgraduate study in Berlin and Vienna 1888-1889, he returned to Baltimore, serving first as assistant, then as associate and then as associate professor of obstetrics in the Johns Hopkins University Medical School from 1889 to 1899. During 1894-1895 he studied in Leipzig, Prague and Paris. In 1899 he became professor of obstetrics in Johns Hopkins University and held this position until his death. He served also as dean of the medical school from 1911 to 1923 and had been obstetrician in chief to the Johns Hopkins Hospital since 1899.

JOHN WHITRIDGE WILLIAMS, M.D.,
1866-1931

The outstanding character of his leadership in the field of obstetrics was everywhere recognized. The honorary D.Sc. was conferred on him by the University of Maryland in 1907 and by the University of Dublin, Ireland, in 1912. In 1915 he received the honorary LL.D. of the University of Pittsburgh. Dr. Williams was a member of the American Gynecological Society, serving as president, 1913-1914; he was a fellow of the American College of Surgeons, and president, 1914-1916, of the American Association for the Study and Prevention of Infant Mortality. He had been president of the Medical and Chirurgical Faculty of Maryland for 1915-1916. He was also corresponding member or fellow of most foreign obstetric organizations.

Dr. Williams was especially noted for his share in the advancement of obstetrics as a specialty. His Textbook of Obstetrics, appearing in 1903, had reached a sixth edition in 1930. To Siebold's history of obstetrics he had contributed a supplement on the history of obstetrics in America. Under his guidance many teachers of obstetrics were developed who are now professors of obstetrics in other American medical schools. He himself contributed notably to obstetric research, the most recent work appearing in THE JOURNAL in August of this year. Especially noteworthy were his researches on anatomy, pathology and bacteriology of the female generative tract; etiology of eclampsia and toxemia; development and diseases of the human placenta; puerperal infection; metabolism and physiology of pregnancy; and syphilis in relation to obstetrics. In his passing the specialty to which he devoted himself so sincerely and earnestly loses an idealistic leader, the great campaign for prenatal care and the lowering of maternal mortality a distinguished veteran.

Emil Mayer ✠ New York; Medical Department of the University of the City of New York, 1877; chairman of the Section on Laryngology and Otology, 1898-1899, American Medical Association, and member of the House of Delegates, 1902 and 1921; member and past president of the American Academy of Ophthalmology and Oto-Laryngology; past president of the American Laryngological Association; surgeon and chief of clinic, throat department of the New York Eye and Ear Infirmary, 1893-1904; representative for the U. S. Medical Intelligence Bureau; for eight years chairman of the Committee for the Study of Toxic Effects of Local Anesthetics, under the auspices of the Council on Pharmacy and Chemistry, which has made noteworthy reports on fatalities from local

anesthetics and recommendations to prevent avoidable accidents; laryngologist to the Mount Sinai Hospital; aged 77; died, October 20, of heart disease.

Donald B. Pritchard ✠ Winona, Minn.; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1887; member of the American College of Surgeons; past president of the Winona County Medical Society; for many years city health officer; for four years president of the board of education; aged 66; chief of staff of the Winona General Hospital, where he died, September 21, of pneumonia and cerebral hemorrhage.

Stephen Grover Burnett ✠ Kansas City, Mo.; Kansas City Medical College, 1885; Medical Department of the University of the City of New York, 1886; at one time professor of nervous and mental diseases, University Medical College of Kansas City; formerly consulting alienist and neurologist to St. Margaret's Hospital, Kansas City, Kan.; aged 69; died, September 11, in St. Joseph's Hospital, of encephalomalacia.

William E. McVey ✠ Topeka, Kan.; Kansas City Medical College, 1888; professor of diseases of the nose, throat and chest, 1892-1913, and dean, 1909-1913, Kansas Medical College, Medical Department of Washburn College; secretary, 1896-1903, president, 1903-1904, Kansas Medical Society; since 1914 editor of the *Journal of the Kansas Medical Society;* aged 67; died, October 21.

Joseph Brown Farrior ✠ Tampa, Fla.; Tulane University of Louisiana Medical Department, New Orleans, 1905; member of the American Academy of Ophthalmology and Oto-Laryngology; past president of the Hillsborough County Medical Society; on the staff of the Tampa Municipal Hospital; aged 50; died, October 3, of carcinoma of the stomach with metastasis.

Arthur Lyman Fisk, New York; Harvard University Medical School, Boston, 1889; formerly attending surgeon to the Trinity and Floating hospitals, New York, Seaside Hospital, New Dorp, Staten Island, consulting surgeon to the New Rochelle (N. Y.) Hospital and the Somerset Hospital, Somerville, N. J.; aged 71; died, October 9.

John Joseph Dunphy ✠ Boston; Harvard University Medical School, Boston, 1921; member of the New England Pediatric Society; on the staffs of the Massachusetts General Hospital, St. Elizabeth's Hospital and the Boston City Hospital; aged 36; died, October 12, of complications, following an operation for appendicitis.

Thompson Frazer ✠ Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1901; member of the American College of Physicians and the American Climatological and Clinical Association; served during the World War; aged 54; died suddenly, October 9, of cerebral hemorrhage.

Edward Alexander Florentine ✠ Ewen, Mich.; Saginaw (Mich.) Valley Medical College, 1899; past president of the Ontonagon County Medical Society; served during the World War; aged 53; died, September 29, of injuries received in an automobile accident.

George W. Squires, Avon, N. Y.; University of Buffalo School of Medicine, 1883; member of the Medical Society of the State of New York; for thirty years health officer and for two years coroner; aged 73; died suddenly, September 26, of heart disease.

Robert Hadden Hale, York, Ala.; Louisville (Ky.) Medical College, 1879; member of the Medical Association of the State of Alabama; past president of the Sumter County Medical Society; aged 81; died, October 2, of cardiorenal disease.

George Sheridan Culver, Sandwich, Ill.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the Illinois State Medical Society; formerly mayor of Sandwich; aged 64; died, September 29, of heart disease.

Francis Page Nelson, Crozet, Va.; Medical College of Virginia, Richmond, 1914; member of the Medical Society of Virginia; served during the World War; aged 44; died suddenly, September 24, of heart disease .

Robert Harrison Johnson, Gretna, La.; Memphis (Tenn.) Hospital Medical College, 1904; aged 59; died, September 19, at the Southern Baptist Hospital, New Orleans, of gastric ulcer with hemorrhage and acute nephritis.

Edward H. Bell, Gwynedd Valley, Pa.; Jefferson Medical College of Philadelphia, 1875; member of the Medical Society of the State of Pennsylvania; aged 82; died, July 28, of cerebral hemorrhage and arteriosclerosis.

Felix Hood Craddock, Sylacauga, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; member of the Medical Association of the State of Alabama; aged 65; died, October 6, of arteriosclerosis.

Edward O. Hanlon, Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1893; formerly bank president; aged 62; died, September 20, in the California Lutheran Hospital, of intestinal obstruction.

Samuel Shattuck Ellis, Buffalo; Harvard University Medical School, Boston, 1928; assistant resident to the Presbyterian Hospital, New York; aged 28; was killed, September 27, in an airplane accident.

Henry L. Hayes, San Francisco; Georgetown University School of Medicine, Washington, D. C., 1890; served during the World War; aged 64; died, September 19, in Monterey, Calif., of angina pectoris.

Duran Shepard Cossitt, Conneaut, Ohio; Western Reserve University Medical Department, Cleveland, 1892; member of the Ohio State Medical Association; aged 65; died, October 8, of heart disease.

Clarence Golden Stigall ✠ San Diego, Calif.; University of Louisville (Ky.) School of Medicine, 1907; aged 45; was found dead in his garage, September 17, of carbon monoxide poisoning.

Herman E. Levin, Lomira, Wis.; Milwaukee Medical College, 1904; aged 52; died, October 2, in St. Agnes' Hospital, Fond du Lac, of intestinal obstruction and carcinoma of the bowel.

Renfred Eastlake Doidge, Perry, Iowa; Rush Medical College, Chicago, 1897; member of the Iowa State Medical Society; aged 69; died, September 19, of carcinoma of the lungs.

Hastings Wyman, Jr., Aiken, S. C.; University of Georgia Medical Department, Augusta, 1902; formerly member of the city council; aged 52; died, September 13, of angina pectoris.

Robert Jacob Baxter, Conneaut, Ohio; Niagara University Medical Department, 1894; for eight years postmaster of Conneaut; aged 64; died, September 30, of cerebral hemorrhage.

William Henry Yandell, Piedmont, Kan.; Louisville (Ky.) Medical College, 1901; aged 61; died, September 4, in a hospital at Wichita, of arteriosclerosis, myocarditis and nephritis.

Chauncey L. Barber, Lansing, Mich.; College of Physicians and Surgeons, Chicago, 1884; served during the World War; aged 73; died suddenly, September 30, of heart disease.

Hanson Smiley Gifford, Tipton, Ind.; State College of Physicians and Surgeons, Indianapolis, 1907; served during the World War; aged 49; died, September 24, of angina pectoris.

John Marcus Dunsmoor, Los Angeles; University of Southern California School of Medicine, Los Angeles, 1900; aged 76; died suddenly, September 19, of heart disease.

Jacob L. O'Dell, Pratt, Kan. (licensed, Kansas, 1918); aged 79; died, July 31, in a hospital at Wichita, of chronic endocarditis, with aortic and mitral insufficiency.

Henry W. Wolfe, Tamaroa, Ill.; Barnes Medical College, St. Louis, 1898; member of the Illinois State Medical Society; aged 61; died, September 18, of heart disease.

R. Bartow Read, New York; Columbia University College of Physicians and Surgeons, New York, 1928; aged 33; was killed, September 27, in an airplane accident.

Solomon Ellis Feinberg, New York; Medical Department of the University of the City of New York, 1892; aged 70; died, September 12, of coronary thrombosis.

Horace Bertram Wilson, San Francisco; St. Louis University School of Medicine, 1923; aged 34; died, September 20, of pulmonary tuberculosis and myocarditis.

Edgar Jay Marsh, Oswego, N. Y.; Eclectic Medical Institute, Cincinnati, 1879; aged 81; died, September 15, of hypostatic pneumonia, following a fractured hip.

Jesse George Holmes ✠ Alamogordo, N. M.; Northwestern University Medical School, Chicago, 1904; aged 54; died, September 28, of chronic myocarditis.

John C. Rudolph, Lawrence, Kan.; Maryland Medical College, Baltimore, 1900; aged 69; died, September 11, of carcinoma of the stomach and duodenum.

J. Sherman Pope, St. Louis; Barnes Medical College, St. Louis, 1904; aged 61; was found dead, October 12, of a self-inflicted knife wound in his side.

A. Clifford Crusselle, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1897; aged 55; died, September 23, of heart disease.

James R. Scott, Malvern, Iowa; Hahnemann Medical College and Hospital, Chicago, 1885; aged 72; died, September 19, of a self-inflicted bullet wound.

John H. Fibbe, Toledo, Ohio; Starling Medical College, Columbus, 1882; aged 74; was found dead, October 7, of cerebral hemorrhage.

Correspondence

GOLDSTEIN'S HEREDOFAMILIAL ANGIOMATOSIS, WITH FAMILIAL RECURRING HEMORRHAGES

To the Editor:—It may be of interest to note since publication of a brief note on "Rendu-Osler-Weber's Disease" in THE JOURNAL, March 14, p. 887, that C. W. Bottema of Holland, Ullmann of Vienna, Földvári of Budapest, Fitz-Hugh of Philadelphia, Hicks and Knox of New York, and I have recently reported seeing such cases. I have been informed by Jackson of Camden and by Yajuzian of Trenton, N. J., that they have each seen one such case, recently. This condition—heredofamilial telangiectasia, hemorrhagic—must be definitely separated from the other hemorrhagic diseases. With the exception of a secondary anemia, the blood is not at all at fault. Bleeding and clotting time, platelets, fragility, clot retraction, and so on, are all normal. The blood elements are normal except for some poor staining. Blood calcium may at times be found to be below normal. The clinical entity here discussed is primarily one of hereditary defective vascular (and capillary) development affecting both sexes and transmitted by both sexes. It is not to be confused with the various primary and secondary anemias, leukemias, hypertensive epistaxis, hemophilia, pseudohemophilia, thrombopenic purpura, hereditary familial thrombasthenia, P. Emile-Weil's "hemogenia," "pseudohämophilia ex afibrinogenia" (Opitz and Frei), Rayer's haemacelinosis, Glanzmann's thrombasthenia, and the deficiency diseases. I recently saw a case with Dr. Sussmann at the Sinai Hospital, Baltimore. Eighteen or nineteen members of the family were similarly affected.

HYMAN I. GOLDSTEIN, M.D., Camden, N. J.

"SIGMOSCOPE" FOR "SIGMOIDOSCOPE"

To the Editor:—For a number of years the terms "Prokto-Sigmoskop" and "Prokto-Sigmoskopie" have been used by Strauss of Berlin. The first use of this term in a title by this author was in 1909 (Beiträge zur Sigmoskopie, *Berl. klin. Wchnschr.* **46**:146, 1909; Ueber Indikationen und Kontraindikationen der Sigmoskopie, *Deutsche med. Wchnschr.* **35**:2101, 1909). This usage has suggested the introduction of the terms "sigmoscope" and "sigmoscopy" for our own use when referring to the sigmoidoscope and the examination of the rectosigmoidal region.

The word "sigmoid" is, of course, derived from the Greek letter sigma, the suffix "-oid" being added to denote that the part of the colon referred to is sigma, or S, shaped. Nevertheless, there seems to be no overwhelmingly good reason why this extra syllable should be retained in developing a word to designate the instrument for examining this region.

In modifying the word "proctodeum," the extra syllable has been dropped to form the more convenient words "prostoscope" and "proctoscopy." While it is understood that the word "proctodeum" has been derived from the Greek "proktos," meaning anus, and that the prefix "procto-" is given as the combining form, thus making "proctoscope" philologically correct, it is felt that there would not be a very great breach of philological practice if the extra syllable were to be dropped from "sigmoidoscope."

The particular reason for suggesting this change is that the terms "sigmoidoscope" and "sigmoidoscopy" are extremely awkward to use. In consequence, when referring to rectosigmoidal examinations, most physicians, and many proctologists, refer to this form of procedure as "proctoscopy." It is felt that this often leads to a neglect of thorough examination of the lower sigmoidal region and in many cases results in overlooking serious lesions which might otherwise be discovered. The use of the word "sigmoidoscope," especially as a verb, is particularly awkward, and there is great temptation to substitute "proctoscope."

It is well known that the Germans are not accustomed to dropping syllables from their words—in fact, it is generally believed that they usually leave each syllable which is necessary to denote the etiology of the word. The fact that Strauss has persisted in using the word "Sigmoskopie" for over twenty years (Ueber Indikationen und Kontraindikationen der Sigmoskopie, *Cong. Internat. de Méd. C.-r.*, Budapest, sect. 6, Med. Int., 1910, p. 639; Die Prokto-Sigmoskopie und ihre Bedeutung für die Diagnostik und Therapie der Krankheiten des Rektum und des Sigmoideum, ed. 2, Leipzig, Georg Thieme, 1930) and that other German authors have adopted it (Münzer, E.: Ein modifiziertes Sigmoskop, *Arch. f. Verdauungskr.* **21**:363, 1915. Rehn, E.: Fortschritte in der Rektoskopie und Sigmoskopie, *Zentralbl. f. Chir.* **48**:1588, 1921) to the exclusion of the older forms, i. e., sigmoidoskopie, romanoskopie, plainly demonstrates that these proctologists have found the use of the older forms clumsy and prefer the shorter but equally expressive words.

It is felt that the use of the terms sigmoscope and sigmoscopy in the English proctologic literature and practice will help to impress on the profession in general the possibility of this form of examination and the great necessity for it.

SIMON B. KLEINER, M.D., New Haven, Conn.
Clinical Instructor in Proctology,
Yale University School of Medicine.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DEGENERATIVE DISEASE OF THE CENTRAL NERVOUS SYSTEM

To the Editor:—I will appreciate your help with the following: A white woman, aged 40, a farmer's wife, delivered five normal, healthy, living children. About three years ago she delivered her sixth child, which was apparently normal at birth. When a week or 10 days old, it did not cry as loud as it should and movements of the hands, arms and legs were weak. Examination at this time showed the baby to have general flaccid paralysis, although it was normal otherwise. The paralysis gradually grew worse, the muscles were atrophied, and the child died at 4 months of age. A year after the birth of this child another baby was born and the same symptoms were evident. The baby died about the third month. About seven months ago the mother delivered another baby—her eighth. I examined this baby closely at birth. It was perfectly normal and weighed 7½ pounds (3.4 Kg.). About a week or ten days after birth there was weakening of all voluntary movements. This progressed until the second month, when it could not use its arms or legs, although there was some movement of the toes and fingers. There was not much atrophy and the child had continued to grow. Its condition remained stationary for three weeks, when it started to improve, until the fourth month, when its movements were about half as active as they should have been. The baby's condition remained about the same until about the sixth month, when it began to grow worse. Now, at the end of the seventh month, it cannot move either hand or leg, there is some atrophy, and it weighs 15 pounds (6.8 Kg.). While this baby has lived three months longer than either of the others, it is growing worse. None of these babies were delivered with forceps, all deliveries being easy and normal. The family history is negative; there is no sign of syphilis. The only thing to be found on examination is the general flaccid paralysis, all reflexes being lost. Please omit name.

M.D., South Carolina.

ANSWER.—These cases seem to be examples of degenerative disease of the central nervous system. The fact that the infants were capable of movement and appeared normal at birth according to the examining physician, who was on the alert for signs at birth, indicates that the motor pathways were intact; namely, nucleus, nerve pathway, anterior horn cell, nerve and muscle. Flaccidity practically excludes an upper motor neuron involvement. Nuclear degeneration, which these patients illustrate, occurs in the Werdnig-Hoffmann type of paralysis. In this condition there is degeneration of all anterior horn cells with consequent paralysis, flaccidity and atrophy. It usually occurs at the end of the first year and is rapidly and progressively fatal. The hands and feet are less completely involved. This finding is mentioned specifically in the third patient. It is markedly hereditary and is said to occur in several children in the same

family, often in several generations. The child seems normal until the onset of the disorder, which leaves the sensorium intact. Death is usually respiratory.

Another condition to be considered is Oppenheim's congenital myotonia, in which generalized flaccid paralysis may develop shortly after birth. Here, too, reflexes are absent while sensation is present. Nutrition is not markedly disturbed. Some children seem fat. Although the lesion is chiefly in the muscle, there is also failure in the development of the anterior horn cells. Death usually results from intercurrent infection. The disease is not usually familial.

Some authorities believe that both the Werdnig-Hoffmann and the Oppenheim type of paralysis are different clinical types of the same disease process. In the patients described, elements of both entities are present. The rapid course, familial involvement, progression of the disease and lesser involvement of the toes and fingers point to the Werdnig-Hoffmann type. The appearance of symptoms almost at birth with paralysis are found in the Oppenheim type. The only specific weight mentioned, namely, 15 pounds at 7 months in the case of the third child, does not spell marked atrophy. The reaction of degeneration would more definitely point to the former condition. Necropsy might have elucidated the nature of the pathologic process.

TOXICITY OF GASOLINE

To the Editor:—In the course of daily practice I see a good deal of anginoidal attacks in workers handling gasoline. I have had several cases in young men between the ages of 25 and 35, who complained of precordial pain and gave all the symptoms and manifestations of either true angina or pseudo-angina, one case resulting in death. All these patients are actively engaged in the handling of gasoline and I would be pleased to have you inform me of the possibility of a hydrocarbon poisoning producing these spells. I will appreciate your personal advice and knowledge of this matter and ask that you cite literature on the subject.

J. C. MAY, M.D., Perryton, Texas.

ANSWER.—Extensive exposure to the vapors of gasoline (petroleum naphtha) may eventuate in (*a*) acute gasoline poisoning, commonly termed a "naphtha jag," which resembles the excitement stage of early ethyl alcohol intoxication; (*b*) chronic naphtha poisoning, which resembles disseminated sclerosis more than any other well known neurologic entity. In addition there are certain evidences of other systemic damage from the naphtha, such as hepatitis (icterus, bile pigments in urine) and anemia.

Early in the chronic form a leukopenia may exist, but this is transient. In neither form of intoxication are anginal attacks a regular feature, and certainly this manifestation is not likely to arise as the sole or principal feature in a series of cases. However, as one manifestation, anginal attacks may occur in some instances, constituting evidence of injury to the cardiac musculature. Anginal attacks at best are a possibility rather than a probability following exposure to gasoline.

A full discussion of the toxicity of gasoline was given by O. M. Spencer in an article entitled "The Effect of Gasolin Fumes" in *Public Health Reports* **37**:2291 (Sept. 22) 1922.

ANGINA PECTORIS

To the Editor:—In what percentage of cases is angina pectoris hereditary? A patient previously apparently well, except for slight cyanosis and slight dyspnea, aged 70, accidentally ran a rusty nail into his foot. The puncture wound was opened freely and cauterized, and 1,500 units of antitetanic serum given. Between forty-eight and fifty-five hours later the patient developed severe anginal attacks—the first attack coming on while sleeping in a chair and the attacks continuing off and on for four weeks, at which time a severe attack, requiring about 1½ grains of morphine during twelve hours to control pain, occurred. Symptoms of coronary occlusion and heart block developed and the patient died within forty-eight hours following this last attack, although he was free from pain during the last twenty-four hours. Previous to this, 1/100 grain of glyceryl trinitrate gave relief in a few seconds. Do you think there was any connection between the administration of the antitetanic serum and the development of the heart trouble (anginal attacks)? No postmortem was done. There were no signs of anaphylactic shock following injection of serum. Please omit name.

M.D., Michigan.

ANSWER.—It is impossible to say in what percentage of cases angina pectoris is hereditary. There is considerable evidence to indicate that there is an hereditary tendency, but this is not considered as conclusive by all authors.

In the case cited it is impossible to state that the antitetanic serum did or did not cause the attack of angina. So far as we know, the serum does not produce such attacks. The fact that there was no anaphylactic shock following the injection may justly be urged as an argument against the connection of the use of the serum and the anginal pain. The more likely explanation is, as suggested in the letter, that a coronary thrombus formed and that the succeeding manifestations of heart block, anginal pain, etc., were due to this and that the relation between the use of the serum and the cardiac symptoms was purely an accidental one.

The autonomic system probably plays a much more important part not only in angina pectoris but also in coronary thrombosis than has been supposed; unfortunately, how large or how small a part cannot be proved. It is known not only that the caliber of the coronary vessels can be altered by autonomic stimuli but also that the blood chemistry can be altered, the ratio of protein constituents changed, and the coagulation altered by these stimuli. The response to a foreign protein might have instituted abnormal autonomic stimuli, with a chain of events predisposing to the coronary thrombosis. Or the patient might easily have had the thrombosis had the accident not occurred. No one knows, but it affords an opportunity for interesting speculation.

PIGMENTATION OF SKIN

To the Editor:—My niece is 12 years of age, 63 inches (160 cm.) in height and weighs 108 pounds (49 Kg.). She has been menstruating a little over a year. The periods are regular and free from pain but the blood is very free. The bowels are regular, the urine is normal and the general health is fine. Since last January there has been developing across her back, on the shoulders and upper arms and on the hips, a dark pigmentation. This is so unsightly that the family is much distressed over it. Can you give me some help as to the etiology and treatment of this trouble? Is it likely there is some endocrine disturbance causing it? Please omit name.

M.D., Louisiana.

ANSWER.—Pigmentation of the back, shoulders, the upper part of the arms and the hips may be due to a variety of causes. It may be a melanosis from arsenic taken internally, ingested in the food or absorbed from wall paper. Localized melanodermia may also be caused by disorders of the endocrine glands, the female generative organs or lesions of the chromaffin system. The distribution of the pigment does not appear to be that commonly observed in Addison's disease or in acanthosis nigricans. No treatment can be suggested without additional clinical and laboratory data and a more careful study of the etiology.

EPILEPSY AND INFECTION

To the Editor:—A boy now 4 years old began to have epileptiform seizures in November, 1929, when 2 years old. In July, 1929, he fell and struck hard on his forehead. He has continued to have attacks, both major and minor, sometimes several attacks. He had various treatments, including the high ketone diet. May 1, 1930, he contracted a "hard cold" with cough and the family physician said that he had "congestion of the tubes." With this condition he had a temperature over 102 F. for some time but just how long is not known. Following recovery the child had no more convulsions until Sept. 30, 1930, nearly six months. Since that time the attacks have continued, though not quite as frequently. Is there any relation between a fever and the disappearance of the attacks for some time? If so, has any work been done along this line?

ARTHUR B. DAVENPORT, M.D., Tunkhannock, Pa.

ANSWER.—The cessation of epileptic seizures during and following infectious diseases has been reported many times. Occasionally a permanent disappearance of the fits has been noted, but usually the improvement is temporary. Identical intermissions have been noted in connection with shocks and insults of various kinds and it is common knowledge that admission to a hospital, without other change of regimen, will sometimes be associated with a temporary diminution in the number of fits. It is of interest also that one of the older methods of treatment in epilepsy, now discarded, consisted in the introduction of a seton under the skin with the purpose of inducing local suppuration.

USE OF DIPHTHERIA TOXOID

To the Editor:—I have in mind three children to whom I intend to give diphtheria anatoxin; two have had quite severe eczemas and still have small patches present. One child is 2 years old and the other about 3¼. Should skin tests for susceptibility be made before giving the anatoxin or is anatoxin to be considered harmless from the standpoint of protein reaction? Are three separate doses to be recommended, or are two sufficient? If three doses are better, what company puts out a three dose package? Please use initials only.

L. B., M.D., Los Angeles.

ANSWER.—Children of 7 years or younger may be given diphtheria toxoid (anatoxin) in full doses without local or general reactions, except in rare instances. Such reactions are only unpleasant, never dangerous. Skin conditions, such as the eczemas, should not interfere with toxoid immunization since toxoid does not contain proteins likely to sensitize or shock.

Two doses of 1 cc. each with an interval of one month are usually sufficient to immunize susceptible subjects.

POSSIBILITY OF MALIGNANT CHANGE IN MOLES

To the Editor:—What is the likelihood of a nevus becoming a melanotic sarcoma? Is it a fact that a nevus that is constantly irritated by the rub of clothing on the back is more likely to change into this malignant type rather than one situated at some other place? Is it the proper procedure to excise a nevus when there is no indication of any malignant changes by the use of endothermy? Is it a common practice among physicians to have a pathologic examination made of a nevus that has been removed, when only ordinary office procedures are required, and when there is no indication of cancerous changes? Is it characteristic of a nevus with sarcomatous changes to produce metastasis rapidly accompanied by high fever, severe pain and aching six weeks after the excision of the nevus, and healing of the wound by primary union? Please omit name.

M.D., Alabama.

ANSWER.—There is always danger that a mole or nevus may become the point of origin of a highly malignant and widely spread tumor, now known most frequently as melanoma. Injury of a mole or "irritation" by clothing or otherwise favors the development of melanoma. To excise a mole in which there is no indication of malignant change by endothermy or otherwise is a proper procedure provided the excision is complete and includes a comparatively wide zone of the healthy tissue around the mole. Melanomas develop not infrequently after incomplete extirpation or other meddlesome treatment of moles. How commonly microscopic examination is made of moles removed under "ordinary office procedures" in cases in which there is no indication of malignant change cannot be stated, but many physicians would like to know whether such moles are in a quiet state or show signs of abnormal cell multiplication. Rapid and extensive metastasis may follow the excision of a mole, even if the wound has healed perfectly, and the possibility that high fever and other general symptoms may develop in such cases from some form of associated intoxication cannot be excluded.

USE OF CONTACT LENSES

To the Editor:—I wish to obtain information regarding contact lenses, with especial reference to their use in a case of keratoconus. Can you tell me whether they are made in this country, and where they may be obtained? Can they, as a rule, be worn by the average patient with comfort? What is their effect in stopping or retarding the progressive stretching of the cornea in keratoconus? Can you give me a rough idea of their cost? I read an article a few months ago in a medical magazine which I have mislaid, and the name of which I cannot recall, that they were now being made in New York. If that is so, can they be obtained in Chicago, or any Western city?

WILLIAM BUSSEY, M.D., Eagle Pass, Texas.

ANSWER.—Contact glasses are not made in this country. The ground contact glass is made by Carl Zeiss of Jena, Germany, and the blown contact glass by Mueller of Wiesbaden, Germany. The former can be obtained from any Zeiss agency in the United States. The length of time that a contact glass can be worn varies with the individual wearer, some not more than half an hour and others up to ten or twelve hours. Again, some individuals can wear a ground contact glass with perfect comfort and not a blown glass, while others prefer the blown glass. Optically, the ground glass is more accurate, but from the standpoint of comfort the blown glass is preferred by many. It is not believed that the continuous use of a contact glass prevents the advance of corneal stretching in keratoconus, as the purpose of the glass is merely to eliminate the refraction of the irregular anterior surface of the cornea. The retail cost of the glass is around $20.

CONGENITAL SYPHILIS

To the Editor:—About three months ago a youth, aged 19, presented himself for treatment for congenital syphilis, stating that his grandfather had paralysis agitans and his mother had always had something wrong with her and was at present losing her mind. His mother had been treated for syphilis two years before for a short time on account of a positive spinal fluid examination. The boy has had several blood Wassermann tests with negative results and while he is not considered bright he has done well in school. He has no complaints and no symptoms, except some burning sensations of the eyes. He will not subject himself to any more blood examinations and "will not have any spinal fluid examined until the doctor has given him what he thinks would ordinarily cure syphilis." Physical examination is essentially negative. I would appreciate it if you can give me some idea of how syphilis would affect this boy of probably the third generation and what course of treatment, if any, would be indicated. Please omit name.

M.D., West Virginia.

ANSWER.—As this youth apparently has a syphilitic mother, it seems more probable that if he is prenatally syphilitic he ranks as a second generation rather than a third generation case. So far as one can see from the description, no evidence is presented to prove that he is even prenatally syphilitic, for he has been repeatedly serologically negative, has no complaints, there are no symptoms, and the physical examination is essentially negative. Unless a reasonable presumption of prenatal syphilitic infection can be established, treatment for syphilis would have to be regarded as a therapeutic test for improving his mental status or as an order over the bar for "shots" emanating from the patient himself. A spinal fluid examination might throw some further light on the situation but at the age of 19, with repeatedly negative blood serologic tests, it seems improbable that an abnormal spinal fluid would appear.

Emphasis should be laid on the question of negative physical examination. The stigmas of prenatal syphilis are sometimes overlooked in routine physical examination and evaluation of suggestive but not presumptive or definitive signs of prenatal syphilis, such as the facies, may be impossible without expert assistance.

In the absence of any evidence in the patient himself of the presence of a syphilitic infection and in view of his unwillingness to repose confidence in his medical advisers by submitting to a complete study, it would seem that treatment for syphilis should be withheld unless one wishes to proceed blindly and without proper control of the case to administer two or three courses of a preparation of bismuth.

KLINE TEST IN SYPHILIS

To the Editor:—I should like to ask you for some information about the value of the Kline test in syphilis.

JORGE E. CAVELIER, M.D., Bogota, Colombia.

ANSWER.—The original Kline test was an adaptation of the Kahn test to a microscopic slide precipitation method. Some years ago Kline abandoned Kahn's antigen and developed a series of microscopic tests. In a recent summary (*Brit. J. Ven. Dis.* **7**:32 [Jan.] 1931), Kline describes tests with unheated serum, heated serum and defibrinated finger blood, and, in addition, highly sensitive "exclusion" (of syphilis) tests and spinal fluid procedures. The Kline test referred to in the literature is generally the one with heated serum. T. H. Miller reports from the clinic of Dr. Stokes in Philadelphia (*Am. J. Syph.* **13**:583 [Oct.] 1929) that this test is more sensitive than the Kahn test and the Kolmer Wassermann and that it gives "a higher percentage of false positive reactions" than either of the two tests. More recently Chargin and Rosenthal have reported from the Venereal Disease Service of the New York department of health (*Am. J. Syph.* **15**:405 [July] 1931), in their study of the Kline test in primary syphilis, an "appreciable number of false positives." It is evident that there is some question as to the specificity of this test. It is, however, being used in some laboratories as a check on the Wassermann or the Kahn test.

CONTINUED USE OF EPHEDRINE IN HAY FEVER

To the Editor:—As a severe sufferer from seasonal hay fever, I should like to ask about the possible harmful effects of continued use of ephedrine hydrochloride. Advertising literature recommends the use of this drug in doses of three-eighths grain, two to three times daily. When I do this I am quite free of symptoms, but until the effect wears off I experience the usual heart consciousness, fast pulse, and so on. Is there to your knowledge any danger of a cardiac hypertrophy in a season's time, from using ephedrine hydrochloride in this amount (about a grain a day)? Discussion has failed to settle the point and many acquaintances think there is danger.

L. Y. DYRENFORTH, M.D., Chicago.

ANSWER.—So far as we are aware, using three-eighths grain (0.024 Gm.) of ephedrine hydrochloride twice a day during the hay fever season does not cause any serious symptoms in the patient. Some people are more susceptible to ephedrine than others and develop a rapid pulse. The dose mentioned seems beneficial without any deleterious effects.

TYPHOID IMMUNIZATION

To the Editor:—A few days ago a physician made the statement that typhoid vaccine given annually for three years would immunize for life. Is this correct? Also, he stated that people over 45 years of age should not take typhoid vaccine, or rather that it was not necessary for them to take it. Please advise. What percentage of people are rendered immune to typhoid after taking the vaccine and for how long?

CLAYTON SHIRLEY, M.D., Tyler, Texas.

ANSWER.—While it is not known that typhoid vaccination each year for three years will immunize completely for life, it would be reasonable to assume that a person so treated will be well protected against natural infection from typhoid.

Persons over 45 years of age should not neglect typhoid vaccination in case they are likely to become subjected to the actual dangers of infection.

The exact percentage of persons "rendered immune to typhoid after taking the vaccine" cannot be stated, but most likely the

resistance to typhoid infection will be increased more or less in practically all properly vaccinated persons. Obviously it cannot be known precisely just how long the preventive effect of typhoid vaccination will last in the individual case, but experience indicates that the preventive effect persists for at least three years and probably longer.

OCCUPATIONAL NEUROSIS

To the Editor:—A woman stenographer, aged 35, has had trouble for several weeks with her third and little finger on the left hand. When she typewrites at times the two fingers will not flex or come down on the type and she has to stop and concentrate or move them with the other hand. There is no trouble in other kinds of work. Examination is negative in every way. Sensation is present; there is no loss of sense to heat or cold, and no pain or atrophy. Otherwise she feels perfectly well. Local treatments of all kinds have been applied but do not help. Could you suggest diagnosis and treatment? Please omit name and address.

M.D., Iowa.

ANSWER.—Whereas the patient is unable to use her third and little finger for typewriting, she is able to use these fingers for other purposes. The fact that this paradoxical weakness is unassociated with any objective changes suggests that the condition is one of so-called occupational neurosis. These occupational palsies can be treated only by psychotherapy of some form or by change of occupation. Local treatments are without avail.

CHOLECYSTITIS WITH PANCREATITIS AND GLYCOSURIA

To the Editor:—A man, aged 50, complains of intense itching of the abdominal skin and to a lesser degree of the rest of the body. He has been treated by different physicians with no apparent results. He had a gallbladder operation with only removal of stones and drainage about a year ago. I find sugar slightly positive in the urine. He says that the urine was always negative before. A trace of bile salts also is present; there is no evidence of jaundice. The patient has been put on a diabetic diet. Please omit name.

M.D., Nova Scotia.

ANSWER.—Probably this patient belongs to that group seen not infrequently in whom cholecystitis is associated with or followed by chronic pancreatitis and glycosuria. It might be of diagnostic value to determine the blood sugar content and also the icterus index of the blood. Assuming that a hyperglycemia will be present, a continuation of the diabetic diet is certainly indicated. The bowels should be kept open, preferably by a mild saline.

ACIDOSIS THERAPY

To the Editor:—A prescription presumed to be useful in the treatment of hay fever has been given extensively in this locality. It is:

℞ Nitrohydrochloric acid N. F. ..... 18 cc.
Aqua, q. s. ..... ad 120 cc.

Sig.: One teaspoonful after meals and at bedtime in two thirds of a glass of water followed by a full glass of water.

I have been unable to get any information which would warrant the use of this and would appreciate hearing from you regarding it. Please omit name.

M.D., Orchard Park, N. Y.

ANSWER.—This was recommended by Dr. Harry Beckman (THE JOURNAL, Nov. 22, 1930), who believes that "acidosis therapy" is successful in 70 per cent of cases of hay fever. Beckman's premise that alkalosis is the cause of allergy is, however, not generally accepted; nor has this treatment been as successful in other hands. Therefore it still remains to be determined whether this prescription has any value, and, if so, in what class of cases.

HYDROGEN PEROXIDE AS A BLEACH

To the Editor:—Would the use of hydrogen peroxide, applied almost nightly to the face, cause any ill effects? The purpose of this procedure is to cause some bleaching of the facial hair, thus avoiding the necessity of shaving twice daily. Can you tell me whether or not the peroxide would accomplish this? Please omit name.

M.D., New York.

ANSWER.—Hydrogen peroxide applied externally is harmless. It accomplishes a gradual bleaching of the darker hairs.

DIPHTHERIA TOXOID FOR IMMUNIZATION

To the Editor:—I gave a baby toxin-antitoxin, three doses of 1 cc. each at 7 months, and four months after the last dose his Schick test is a marked positive. Could toxoid be used to immunize him now or should the toxin-antitoxin be repeated? Please omit name.

M.D., West Virginia.

ANSWER.—It would be better to use diphtheria toxoid for further immunization of the baby.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Clinical.* Chicago, Dec. 29. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

ARKANSAS: *Regular.* Little Rock, Nov. 10-11. Sec., Dr. Sam J. Allbright, Searcy. *Eclectic.* Little Rock, Nov. 10. Sec., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith. *Homeopathic.* Eureka Springs, Nov. 10. Sec., Dr. Allison A. Pringle, Eureka Springs.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 10-11. *Endorsement.* Hartford, Nov. 24. Sec., Dr. Thomas P. Murdock, 147 West Main St., Meriden. *Homeopathic.* New Haven, Nov. 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: *Regular and Homeopathic.* Wilmington, Dec. 8-10. Sec., Dr. Harold Springer, 1013 Washington St., Wilmington.

FLORIDA: Jacksonville, Nov. 23-24. Sec., Dr. Wm. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

KANSAS: Kansas City, Dec. 8. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 1-3. Sec., Dr. A. T. McCormack, 532 West Main St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MARYLAND: Baltimore, Dec. 8-11. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

NEBRASKA: Lincoln, Nov. 23-24. Act. Sec., Mr. P. H. Bartholomew, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 7. Sec., Dr. John W. MacConnell, Davidson.

OHIO: Columbus, Dec. 8-10. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

SOUTH CAROLINA: Columbia, Nov. 10. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Fort Worth, Nov. 17-19. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

UTAH: Salt Lake City, Dec. 1-2. Dir., Mr. S. W. Golding, 412 State Capitol Building, Salt Lake City.

VIRGINIA: Richmond, Dec. 8. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

WEST VIRGINIA: Morgantown, Nov. 19-21. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 West Wisconsin Ave., Milwaukee.

New York January Examination

Mr. H. J. Hamilton, chief, Professional Examinations, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 26-29, 1931. The examination covered 9 subjects and included 10 questions. An average of 75 per cent was required to pass. One hundred and ninety candidates were examined, 134 of whom passed and 56 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Yale University School of Medicine	(1928, 2),	(1929)	3
Georgetown University School of Med	(1927, 2),	(1930, 3)	5
George Washington University Medical School	(1930, 6)		6
Howard University School of Medicine	(1929)		1
Emory University School of Medicine	(1928)		1
University of Georgia Medical Department	(1926),	(1928)	2
Loyola University School of Medicine	(1930)		1
Rush Medical College	(1928),	(1930)	2
University of Louisville School of Med	(1929, 2),	(1930)	3
Johns Hopkins University School of Medicine	(1928)		1
University of Maryland School of Medicine and Surgery and College of Physicians and Surgeons	(1930, 2)		2
Boston University School of Medicine	(1928),	(1930)	2
Harvard University Medical School	(1928, 2)		2
Tufts College Medical School	(1929),	(1930)	2
University of Michigan Med. Sch	(1927),	(1928), (1930, 2)	4
St. Louis University School of Medicine	(1926),	(1930, 5)	6
University of Nebraska College of Medicine	(1929)		1
Columbia Univ. College of Phys. and Surgs.	(1929),	(1930, 7)	8
Cornell University Medical College	(1930, 2)		2
Long Island College of Medicine	(1930, 9)		9
New York Homeopathic Med. Coll. and Flower Hosp.	(1930)		1
Syracuse University College of Medicine	(1930, 2)		2
University and Bellevue Hospital Medical College	(1930, 8)		8
University of Buffalo School of Medicine	(1930, 2)		2
University of Rochester School of Medicine	(1929)		1
University of Oklahoma School of Medicine	(1926)		1
Hahnemann Med. College and Hosp. of Philadelphia	(1930, 2)		2
Temple University School of Medicine	(1928),	(1929)	2
University of Pennsylvania School of Medicine	(1930, 3)		3
University of Pittsburgh School of Medicine	(1928),	(1930)	2
University of Vermont College of Medicine	(1928)		1
University of Virginia Department of Medicine	(1929)		1
University of Wisconsin Medical School	(1929),	(1930)	2
University of Alberta Faculty of Medicine	(1929)		1
Dalhousie University Faculty of Medicine	(1929)		1
Queen's University Faculty of Medicine	(1928, 2),	(1930)	3
University of Toronto Faculty of Medicine	(1923), (1925, 2), (1927), (1928, 2), (1929, 3), (1930, 2)		11

College	PASSED	Year Grad.	Number Passed
McGill University Faculty of Medicine		(1927), (1928), (1929), (1930, 4)	7
University of Vienna Faculty of Medicine		(1930)*	1
German University of Prague Faculty of Medicine		(1921)*	1
University of Berlin Faculty of Med.		(1922), (1926),* (1928)	3
Medical Faculty of the Univ. of Frankfurt-am-Main		(1923)*	1
University of Budapest Faculty of Medicine		(1921)*	1
National University of Ireland Faculty of Medicine		(1923)	1
University of Dublin School of Physic, Trinity College		(1925)	1
Royal University of Bologna Faculty of Med. and Surg.		(1927)	1
Royal Univ. of Naples Fac. of Med. and Surg.		(1927), (1928)	2
Royal University of Rome Faculty of Med. and Surg		(1930)	1
University of Kharkov, Faculty of Med., U. S. S. R.		(1922)*	1
University of Edinburgh Faculty of Medicine		(1930)	1
Osteopaths			5

College	FAILED	Year Grad.	Number Failed
Yale University School of Medicine		(1928)	1
Georgetown Univ. School of Med.		(1928), (1929), (1930, 6)	8
Howard University School of Medicine		(1930, 2)	2
Loyola University School of Medicine		(1930, 2)	2
Rush Medical College		(1930)	1
University of Louisville School of Medicine		(1927)	1
Boston University School of Medicine		(1929), (1930)	2
Tufts College Medical School		(1927), (1928)	2
Detroit College of Medicine and Surgery		(1928)	1
St. Louis University School of Medicine		(1930)	1
University of Nebraska College of Medicine		(1929)	1
Cornell University Medical College		(1930)	1
New York Homeopathic Med. Coll. and Flower Hosp.		(1916)	1
Syracuse University College of Medicine		(1930)	1
University of Oklahoma School of Medicine		(1929)	1
Medical College of the State of South Carolina		(1926)	1
University of Vermont College of Medicine		(1926)	1
Medical College of Virginia		(1929)	1
Queen's University Faculty of Medicine		(1929), (1930)	2
McGill University Faculty of Medicine		(1924)	1
University of Graz Faculty of Medicine, Austria		(1905)*	1
University of Vienna Faculty of Medicine		(1926)*	1
University of Berlin Faculty of Medicine		(1925)*	1
University of Jena Faculty of Medicine, Germany		(1925)*	1
University of Budapest Faculty of Medicine		(1917)	1
Royal Hungarian Elizabeth Univ. Faculty of Medicine		(1925)	1
Royal Univ. of Bologna Faculty of Med. and Surg.		(1928)*	1
Royal University of Naples Faculty of Medicine and Surgery.		(1923, 2), (1925),* (1927)	4
Royal Univ. of Rome Fac. of Med. and Surg.		(1927), (1930)*	2
Royal Univ. of Palermo Fac. of Med. and Surg.		(1920), (1928)*	2
University of Portugal Faculty of Medicine		(1925)	1
University of Cluj Faculty of Medicine, Roumania		(1926)	1
University of Saratov Faculty of Med., U. S. S. R.		(1922)*	1
Moscow State University Faculty of Med., U. S. S. R.		(1920)*	1
School of Medicine of the Royal Colleges, Edinburgh		(1929)	1
University of Istanbul Faculty of Medicine, Turkey		(1916)*	1
Osteopaths			3

Mr. Hamilton also reports 67 candidates licensed by the endorsement of credentials from Jan. 1 to May 1, 1931. The following colleges were represented:

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
College of Medical Evangelists		(1928)	N. B. M. Ex.
University of Colorado School of Medicine		(1927), (1928)	N. B. M. Ex.
Georgetown University School of Medicine		(1918)	Porto Rico
Howard University School of Med.		(1925) N. Car., (1929)	Virginia
Emory University School of Medicine		(1917)	Georgia
Chicago College of Medicine and Surgery		(1917)	Illinois
Northwestern University Woman's Medical School		(1899)	Mass.
Indiana University School of Medicine		(1928), (1929)	Indiana
State University of Iowa College of Medicine		(1928)	Iowa
Tulane University of Louisiana Medical Department		(1910)	Louisiana
Tulane University of Louisiana School of Medicine		(1926)	N. B. M. Ex.
College of Physicians and Surgeons of Baltimore		(1907)	Porto Rico
Johns Hopkins University School of Medicine		(1916) (1924) N. B. M. Ex., (1923), (1928), (1929)	Ohio Maryland
Boston University School of Med.		(1919) Porto Rico, (1929)	N. B. M. Ex.
Harvard University Medical School		(1928)	N. B. M. Ex.
St. Louis Univ. School of Med.		(1924) Minnesota, (1927)	Ohio
University of Minnesota Med. School		(1927) Minn., (1930)	N. B. M. Ex.
Washington University School of Medicine		(1930)	N. Carolina
Columbia University College of Phys. and Surgs.		(1927, 2) (1928), (1929, 2)	N. B. M. Ex.
University of Cincinnati College of Medicine		(1927), (1928)	Ohio
University of Oregon Medical School		(1929)	N. B. M. Ex.
Hahnemann Med. College and Hosp. of Philadelphia		(1911)	Porto Rico
Jefferson Medical College of Philadelphia		(1918) (1925) Ohio, (1927) New Jersey	Virginia
University of Pennsylvania School of Medicine		(1929)	New Jersey
University of Pittsburgh School of Medicine		(1924)	Ohio
Woman's Medical College of Pennsylvania		(1909)	Penna.
University of Tennessee College of Med.		(1924), (1930, 3)	Tennessee
Baylor University College of Medicine		(1927)	Texas
Southern Methodist University Medical Dept., Texas		(1913)	Texas
University of Vermont College of Medicine		(1902)	Mass.
Medical College of Virginia		(1926)	Maryland
University of Virginia Dept. of Med.		(1927), (1928), (1929)	N. B. M. Ex.
McGill Univ. Faculty of Med.		(1924) Maryland, (1929, 2)	N. B. M. Ex.
University of Vienna Faculty of Medicine		(1921)*	Diploma
University of Breslau Faculty of Medicine		(1925),* (1926)*	Germany
Univ. of Budapest Faculty of Med.		(1916) W. Va., (1919)	Ohio
Royal Univ. of Palermo Faculty of Med. and Surg.		(1905)	New Jersey
Medical Institute of Leningrad, U. S. S. R.		(1912)*	Diploma
Odessa State Medical Institute, U. S. S. R.		(1917)*	Diploma
University of Edinburgh Faculty of Medicine		(1928)	N. B. M. Ex.
Osteopath			New Jersey

* Verification of graduation in process.

North Dakota July Report

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, July 7-10, 1931. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Thirteen candidates were examined, 12 of whom passed and one failed. Four physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1931)	86.5
Northwestern University Medical School		(1931)	83.6
University of Illinois College of Medicine		(1931)	80
University of Louisville School of Medicine		(1930)	83.5
University of Michigan Medical School		(1930)	86.5
University of Minnesota Medical School		(1930) 78.5, (1931)	75.5
Washington University School of Medicine		(1927)	83.5
University of Nebraska College of Medicine		(1929) 75, (1930)	79
Syracuse University College of Medicine		(1929)	79.4
University of Manitoba Faculty of Medicine		(1921)	80

College	FAILED	Year Grad.	Per Cent
Marquette University School of Medicine		(1925)	65

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1925)	Illinois
Northwestern University Medical School		(1929)	Illinois
Indiana University School of Medicine		(1927)	Indiana
University of Nebraska College of Medicine		(1919)	Nebraska

Medical Economics

ANNUAL CONFERENCE OF THE ASSOCIATION PROFESSIONNELLE INTERNATIONALE DES MÉDECINS

(By a Special Correspondent)

The Association professionnelle internationale des médecins, more familiarly known as the A. P. I. M., held its sixth annual conference in Budapest from September 9 to 13, on the invitation of the National Association of Hungarian Physicians. The A. P. I. M. is an association of national medical organizations; that is to say, it recognizes in each country only that group which represents the great bulk of the profession. It deals only with professional as distinguished from scientific matters. It does the main part of its work by questionnaires issued throughout the year, the results of which are discussed at the annual meeting.

At present the national groups represented consist of Germany, Austria, Belgium, Denmark, Norway, Sweden, France, Great Britain, Holland, Hungary, Lithuania, Luxemburg, Poland, Yugoslavia, Switzerland, Spain, Canada, Bulgaria, Danzig, Esthonia, Palestine, Czechoslovakia, Rumania, United States, Uruguay, Cuba and Portugal. Of these the first sixteen were directly represented by one representative each, generally the president or the secretary of the group. Bulgaria and Canada were represented by deputy. Spain had a representative for the first time. These conferences are interesting, for it is astonishing how, in spite of the difference of conditions as between nation and nation, the medical problems are much the same everywhere. The official language is French, but most of the delegates speak German quite as fluently, or more so, and that language is often used. But the rule is that if a member uses any other language than French his remarks must be immediately translated into that language. The president was Dr. Narbeshuber of the Austrian group, a man who stands preeminent for his devotion to the interests of the Austrian profession. In his address he dealt with the work of the A. P. I. M. during a strenuous year but devoted most of his time to the question of health insurance, which invariably occupies most of the time of the conferences. The report of the general secretary (Dr. Fernand Decourt of France, the founder and the life and soul of the movement) dealt with the difficulty experienced in getting replies out of the national correspondents, a difficulty which was better understood when the president remarked that many of the groups, of which his was one, could not afford the necessary staff and had to depend on the voluntary labors of overworked men. He himself acts

as president, secretary and correspondent for the Austrian group. It was resolved to keep the number of questionnaires down as far as possible and to give longer time for their return.

It was resolved to have a report next year on the possibility of instituting an organized international exchange of the children of physicians for educational and cultural purposes.

It was decided that during the coming session questionnaires should be circulated dealing with (1) the medical inspection and treatment of school children and (2) the opinion of the profession and the practice in each country as regards the patenting of medical inventions and discoveries. The latter question is arousing a great deal of discussion in several countries, including Great Britain, where up to now it has been assumed that it is unethical and against public interest that the benefit of such discoveries should be in any way restricted by considerations of personal gain. The practice and even the tradition seems to be quite different on the continent.

Reports on health insurance affairs were given from various countries. France has just inaugurated its system, and the results will be watched with great interest, because after a big fight the French doctors have succeeded in securing that the insured person shall pay the doctor's bill direct, afterward recovering a portion of it from the local insurance authority. The bill is made out according to a tariff established by the doctors themselves. The French doctors regard this method as being the best protection against the interference in professional affairs by bodies which in nearly every other country have succeeded in making the position of the doctors exceedingly uncomfortable, and sometimes almost unbearable. The reports from Germany, Austria and Hungary were very depressing, the efforts of the caisses (the lay insurance authorities) to dominate the profession and to diminish its income being greatly helped by the oversupply of doctors in these countries. Dr. Schneider of Germany said that the financial stability of their system and of the medical profession had been seriously undermined by exaggerated benefits being given and by the constant extension of the scope of the system, so that now such a large proportion of the population was insured that there was little scope for private practice. From all the continental countries there was reported a tendency to spend unnecessary money on elaborate buildings, the money being found to a great extent by reducing the doctors' pay. The feeling that the whole financial structure of health insurance was threatened was evidently shared by all the central European representatives. But it must be clearly understood that the unanimous opinion of those present was that health insurance is a good thing if it can be kept within proper limits and secure from manipulation by political parties.

A warm discussion developed on a proposal that the right of the doctor who wanted to take part in insurance work should be limited to those who are members of the national group, Germany and Belgium in particular being afraid of the "blackleg." But the majority believed that the only way for the profession to retain the sympathy of the insured person is to insist that the latter shall have full choice among all the doctors who wish to take part in the service, and that it is the business of the medical groups to induce every doctor to come inside their organizations.

Hungary was anxious that doctors should have full representation in the administration of the cash as well as of the medical benefits, and gave reason for their wish, based on their own distressing experience, but it was ultimately decided that the profession could rightly claim representation only on bodies dealing with medical treatment; otherwise it would be difficult to resist the claim that the caisses should be represented on bodies dealing solely with medical affairs—a claim that has been successfully resisted in some countries, including Great Britain.

There were many animated discussions on matters of international importance to the profession, which will be covered in the November issue of the *Revue internationale*. Those interested in the question of health insurance should read this publication, which is issued quarterly. The August number contains by far the most complete statement that exists as to the medical side of health insurance in nearly every country. The subscription is 20 French francs a year and it is published (in French) by the A. P. I. M. at 95, Rue du Cherche-Midi, Paris.

The social side of the meeting was admirably arranged by the Hungarian colleagues, with the help of the government. Dr. Csillery, an ex-minister, and president of the Hungarian group, together with Dr. Temesvary, the secretary, were indefatigable in their kindness. Perhaps one example of the financial state of affairs in central Europe will suffice. The chief secretary of a government department dealing with health matters—a man who in England would be getting £2,000 a year, and certainly more in the United States, was in receipt of something under £500 a year, on which a further cut is shortly to be made.

Book Notices

DIAGNOSIS IN JOINT DISEASE: A CLINICAL AND PATHOLOGICAL STUDY OF ARTHRITIS. By Nathaniel Allison, M.D., F.A.C.S., Professor of Surgery, in Charge of Division of Orthopedic Surgery, University of Chicago, and Ralph K. Ghormley, M.D., Associate in Orthopedic Surgery, Mayo Clinic. From the Orthopedic Service of the Massachusetts General Hospital and the Harvard Medical School (1924-1930). Assisted by the DeLemar Mobile Research Fund. Cloth. Price, $9. Pp. 196, with 71 illustrations. New York: William Wood & Company, 1931.

The qualifications of the authors of this volume are excellent. One is professor of orthopedic surgery at a university; the other is a leading orthopedic surgeon of one of the largest clinics. The book has all the qualifications of an atlas with the addition of an excellent manuscript and legends for the illustrations. The subject matter was well chosen. The sequence of discussion of subjects is excellent. The illustrations, including photographs, diagrams, roentgenograms and photomicrographs, have been better chosen than, in many instances, executed. The photomicrographs of tubercle formation in synovial membrane and in bone are of great value. The references include those of Nichols and Richardson, of Fisher and of Ely. This volume represents several years of intensive study and collection of material. The authors give the compilation of data and their experience over a period of six years of study of 289 cases of arthritis. They collected the clinical, roentgenologic, bacteriologic, chemical and pathologic data in these cases. They approach the subject from the standpoint of three main issues: What is the etiologic factor? What tissue of the joint is primarily affected? What is the character of the tissue change? They give Nichols and Richardson unlimited credit for their work on the subject of arthritis. They give Ely much credit for his pathologic studies, and also compliment Fisher, Pemberton and Swift.

The authors emphasize the fact that one of the important necessities in the study of joint diseases is greater accuracy in methods of diagnosis. They urge a common basis of classification of disease processes. The subjects covered are discussed in the following order: the physiology and chemistry of joint structure; the classification of arthritis; the classification of joint diseases; tuberculosis; traumatic arthritis; arthritis associated with loose body formation; pyogenic infections of joints; arthritis of uncertain origin; proliferative arthritis, and degenerative arthritis.

Considerable space is given to the subject of osteochrondritis dissecans. The most recent work on the physiology and chemistry of joint structures is discussed, including the synovial fluid, cartilage and bone. They offer a classification of arthritis, dividing the subject into two main sections: those in which the origin is known and those in which the origin is unknown. Those of known orgin are divided into four classes: traumatic arthritis, bacterial agent, arthropathies and constitutional disturbances. Those of unknown origin are given as proliferative arthritis, degenerative arthritis and unclassified. They believe that any classification should have for its basis the etiologic factors responsible and the primary tissue changes that result. They emphasize that disease processes are not of the bone but in the bone. In all forms of arthritis, with only one exception—the degenerative form—the disease process primarily affects first the synovial membrane, which proliferates, and secondly the marrow and connective tissue, which proliferates. All tissue changes, such as atrophy and hypertrophy, loose body formation, eburnation and cartilage destruction, are secondary changes which follow the process of synovial and marrow proliferation. The diagnosis of proliferative arthritis is positively made by

tissue study and the finding of focal collections of lymphocytes in the marrow and the synovial membrane.

One would be remiss in one's duty if one did not mention the chief adverse criticism. There are several typographic errors; some roentgenograms are upside down. The gross colored plates are disappointing, to say the least. It is unfortunate that many of the roentgenograms do not illustrate what the legends state. Such conditions as tumors of bone, tumors of the synovial membrane, synovial outpouchings and syphilitic arthritis are not discussed. The reader will find that a magnifying glass is helpful in the examination of the photomicrographs. Ghormley found that, in forty-one cases in which the diagnosis of tuberculosis of the joints was made, only twenty-seven, or 66 per cent, were proved to be tuberculous. In fifty-two cases in which the diagnosis of tuberculosis was set down as the probable cause of the joint disease, only twenty-seven, or 52 per cent, were proved to be tuberculous. In forty-two cases in which tuberculosis was not considered as a possible cause, twenty-three, or 55 per cent, were proved to be tuberculous. Twenty-nine per cent of all cases of arthritis remain uncertain of diagnosis after the completion of all clinical tests.

The publishers have produced an attractive book. It can be recommended highly. It should be of value to orthopedic surgeons, pathologists and internists.

HANDBUCH DER MIKROSKOPISCHEN ANATOMIE DES MENSCHEN. Herausgegeben von Wilhelm v. Möllendorff. Band VII: Harn- und Geschlechtsapparat. Teil 2: Männliche Genitalorgane. Bearbeitet von Dr. H. Stieve, o. ö. Professor der Anatomie und Vorstand der anatomischen Anstalt der Universität Halle-Wittenberg. Paper. Price, 128 marks. Pp. 399, with 245 illustrations. Berlin: Julius Springer, 1930.

This is one of the best volumes of the series. The presentation is morphologic, but features of physiologic importance are duly stressed and, read from the background of a dynamic account of the subject such as Maximow gave in his textbook, it is the best account that has been written. The descriptions are confined to human material and based on the author's own series, which includes many stages, well preserved, from the embryonic period to senility. The illustrations are perfectly objective but clear and comprehensive. The literature, especially the German, is fully considered but opinions which differ from the author's are given scanty shrift. The account of the embryonic development of the testis with which the volume begins adds to knowledge in a debated field. The idea of a "keimbahn" and the genetic significence of the chromosomes are treated with great skepticism. The interstitial cells of the testis are assigned a part in the nutritional regulation of the organ and denied endocrine significance. They are regarded as closely related to histiocytes; from the evidence presented, it would seem that two distinct cell types have been confused because of an inadequate cytologic technic. In the next section, on the accessory organs, the need of chemical and post-vital cytologic studies is also manifest. The vascular system of the penis is fully presented but there are no other descriptions of the vascular patterns such as often help materially in the understanding of the function as well as the structure of an organ. The structure of the male urethra is included in this volume.

THE DISPLACEMENT METHOD OF SINUS DIAGNOSIS AND TREATMENT: A PRACTICAL GUIDE TO THE USE OF RADIOPAQUES IN THE NASAL SINUSES. By Arthur W. Proetz, A.B., M.D., Assistant Professor of Clinical Otolaryngology in the Washington University School of Medicine. Cloth. Price, $6. Pp. 242, with 145 illustrations. St. Louis: Annals Publishing Company, 1931.

This monograph is the result of much careful, ingenious and original research having for its object the diagnosis and treatment of diseases of the nasal accessory sinuses. There is first a consideration of the principles of displacement, description of the apparatus employed, physics and physiology of the sinuses, as well as discussion of their anatomic peculiarities, their pathology, and the theory of their treatment. The author takes up the various types of radiopaque fluids and the method of their introduction, together with the various data of the proper roentgenology to be employed. Several chapters are devoted to studies of topography, cell identification, film interpretation, filling and emptying time. An interesting and also important chapter is that which deals with the observation of allergic changes in the sinuses by means of radiopaques. A series of case records and a complete bibliography are given at the end of the work. Great credit is due Dr. Proetz for his clever and painstaking studies, which are giving so much aid to rhinologists in the diagnosis and treatment of sinus disease. In this clearly written and well illustrated work, he shows his methods so that they may be applied by all who are interested in this subject. From the point of view of originality and its great scientific as well as practical value, this monograph is one of the finest contributions to rhinology that has appeared in a long time. The perusal of the work will prove of immense value to every rhinologist desirous of giving his patients the benefits of the valuable procedure of displacement so admirably described.

DIE GESAMTE WIEDERHERSTELLUNGSCHIRURGIE ZUGLEICH 2. AUFLAGE DER WIEDERHERSTELLUNGSCHIRURGIE. Bände I und II. Von Erich Lexer, ord. Professor der Chirurgie an der Universität München. Paper. Price, 108 marks. Pp. 896, with 1910 illustrations. Leipzig: Johann Ambrosius Barth, 1931.

This is a large and beautifully prepared monograph on plastic and reconstructive surgery by a master in the field and is, in reality, the second edition of Lexer's work on reconstructive surgery, written immediately after the World War. That volume, published in 1920, was written with the idea of assisting the reconstruction of the war wounded, was a single small volume of 361 pages, and discussed and presented actual cases illustrating the repair of tissue defects, the repair of functional defects due to adhesions, and the repair of defects and disfigurements of the face due to adhesions. In this edition the author has greatly broadened the scope of the work, which now covers the entire field of plastic and reconstructive surgery. It is divided into three main sections: holes in or absence of tissue; malformations of shape and position; disturbances of motion. These may be congenital, or acquired through disease, injury or operation. In each section the congenital lesions are considered first. The material is divided into two volumes. The author is well known as a plastic surgeon and has been collecting material for such a book since 1905, during his rich experience as chief of the surgical clinics successively at Königsberg, Jena, Freiburg and recently at Munich. He has conceived and contributed numerous new plastic operative procedures, which, together with his rich researches in tissue and organ transplantation, both in the laboratory and in his clinic, form the basis of this monograph. After living and working untiringly in this field all these years, with his rich material and his genius in this type of work, he has produced a work that is a classic. The author has been recognized as one of the leading workers in the free transplantation of tissues and organs, both experimentally and clinically. He has stimulated and directed the work of younger men in his clinic along these lines. He collected his work and theirs, both experimental and clinical, together with that of others in the field, in two volumes entitled "Die freien Transplantationen," the first volume of which appeared in 1919 and the second in 1924. This set still remains the authority on the subject. In "Die gesamte Wiederherstellungschirurgie" he has incorporated the important clinical facts and material collected in the earlier set, omitting, however, most of the historical data and purely experimental studies. The two sets, therefore, complement each other and together constitute the most valuable literary contribution extant on the subject by any one author. The first volume of "Die freien Transplantationen" appeared in 1919 and the second in 1924. These contained Lexer's tissue transplantation cases up to that time. The new contribution includes his cases up to 1930, and there is much that is new. As an example may be mentioned the use of mucous membrane from the lower lip in the reconstruction of the urethra in cases of stricture. In "Die freien Transplantationen" he reported successful cases in which he made use of the patient's normal appendix for this purpose, a method original with him, but he adduced evidence showing that the appendix, thus used, eventually disappeared and he recorded some failures of the method in the hands of other surgeons and suggested that the use of mucous membrane from the lower lip as theoretically the most likely successful method. He later tried out this suggestion, using the same technic that Nové-Josserand had employed, of suturing the transplant around a catheter as a cylindric cuff, except that Lexer used mucous membrane from the lower lip instead of epidermis. He reports

successful use of this new method in a few cases and gives all the details of one of them. The work covers a surprising amount of the surgical field, including as it does plastic surgery and many of the most difficult problems of the surgery of childhood and of nerves, muscles, tendons, bones and joints. Much of Lexer's best work has been in these fields, and his many valuable contributions are here easily available and systematically arranged, together with critical evaluation of the best contributions from other surgeons which he has found clinically useful. His reconstruction cases, including those since 1924, are here recorded and profusely illustrated. All surgeons of experience will welcome this valuable addition to the literature.

CUTANEOUS X-RAY AND RADIUM THERAPY. By Henry H. Hazen, A.M., M.D., Professor of Dermatology, Medical Department of Georgetown University. Cloth. Price, $3. Pp. 166, with 28 illustrations. St. Louis: C. V. Mosby Company, 1931.

In the preface of this book, which is dedicated to George Miller MacKee, the author states that his aim has been to write a short essentially practical book that will aid in the selection of cases for irradiation, give safe advice as to the technic, and warn against the many pitfalls. It is apparent from a perusal of the contents that the author's intention was not to write a monograph but rather to give a digest of his many years of personal experience, giving due credit to the pioneer work of other continental and American workers in this field. There are a number of perhaps minor criteria that detract from the usefulness of this work. The illustrations are for the most part poor; and although the author states that the usual before and after photographs have been omitted because of lack of space, their inclusion would have greatly added to the value of the book. There also are not enough illustrations of the technical application of the x-ray apparatus which are so essential for the beginner. The consideration of long wave or grenz ray therapy is so inadequate as to suggest lack of first-hand familiarity with this latest innovation in roentgen therapy. The paragraphs on radium therapy are entirely too brief and sketchy to be of any value to the practical worker. The treatment of the individual skin diseases is fairly well covered, although a few of the author's personal opinions would seem to require qualification. The statement that "a strawberry nevus yields to light doses of x-rays" is contrary to the experience of many men. There are appropriate warnings of the dangers of too frequently repeated fractional doses in the treatment of acne and of the extreme hazards of treatment of hypertrichosis by beauty shop operators.

HISTOFYSIOLOGISKE UNDERSØGELSER OVER NYREFUNKTIONEN MED SÆRLIG HENBLIK PAA THEOPHYLLINDIURESEN. Af Harald Okkels. Paper. Pp. 192, with 10 illustrations. Copenhagen: Levin & Munksgaard, 1930.

This is a doctorate thesis accepted by the medical faculty of the University of Copenhagen. The thesis gives a critical review of the histophysiologic methods for the study of renal function but deals principally with the morphology of the kidney of the frog under various forms of function as observed by microscopic examination of the living kidney in situ and by cytologic study of fixed material. There is also a chapter on the results of certain supplementary experiments on rabbits. The results are summarized in Danish and also in French. The thesis will interest especially investigators actively engaged in the study of renal function.

FRACTURES OF THE JAWS. By Robert H. Ivy, M.D., D.D.S., F.A.C.S., Professor of Maxillo-Facial Surgery, Graduate School of Medicine, and Lawrence Curtis, A.B., M.D., D.D.S., Assistant Professor of Maxillo-Facial Surgery, Graduate School of Medicine, University of Pennsylvania. Cloth. Price, $4.50. Pp. 180, with 177 illustrations. Philadelphia: Lea & Febiger, 1931.

This book contains the result of many years' experience in the treatment of fractures of the jaw and their complications. The authors emphasize the haphazard way in which these fractures are frequently handled, resulting in permanent disability of the jaw unless correction is obtained by measures which require months of treatment. They claim for their method the important advantage that it can be applied by the oral surgeon or dentist immediately, regardless of the case, without resort to highly technical dental laboratory procedure, so that practically no time is lost in the reduction and fixation of the fragments. The book is divided into six parts: anatomic considerations; general consideration of fractures; fracture of the mandible; complications of fracture of the mandible; fracture of the maxilla, and fracture of the malar bone and zygomatic arch. The chapter on roentgenographic technic was written by Ennis. The chapter on dietary management in fractures of the jaw was written by Scogin.

FURTHER INVESTIGATIONS OF THE VARIOLA-VACCINIA FLOCCULATION REACTION. By James Craigie and W. J. Tulloch. Medical Research Council, Special Report Series, No. 156. Paper. Price, 3s. Pp. 129, with 17 illustrations. London: His Majesty's Stationery Office, 1931.

This report deals with the results of the reactions obtained on mixing antivaccinia serum from the rabbit with extracts of material from the lesions of vaccinia and smallpox. It appears to be established definitely that the resulting flocculation or precipitation is specific and that variola and vaccinia are identical immunologically. The technic of preparing the extracts for the test and the method of making the test are described in detail. The possibilities of new methods of immunization by means of mixtures of antiserum and virus are discussed. The report will be of especial interest to all investigators of fundamental problems of variola and vaccinia.

THE THIRTY-FIFTH REPORT ON FOOD PRODUCTS AND THE TWENTY-THIRD REPORT ON DRUG PRODUCTS, 1930. Bulletin 329 of the Connecticut Experiment Station. Paper. Pp. 610-669. New Haven: Connecticut Agricultural Experiment Station, 1931.

This is a summarized report for 1930 of the examination of a wide variety of foods and drugs at the Connecticut Agricultural Experiment Station in connection with the food and drug control work of that state. Chemical analyses of the products examined are listed and pertinent information on their composition is furnished. Attention is called to the misbrandings and adulterations disclosed. This annual report is a most valuable source of authentic information on marketed foods and drugs; it is especially useful to food, drug and health officials.

FARMACOLOGÍA DE LA DIGITAL. Por. A. Gámir. Paper. Price, 7 pesetas. Pp. 308. Madrid: Editorial Paracelso, 1931.

This monograph on digitalis aims to present in one volume as completely as possible what is actually known about the action and therapeutic uses of digitalis. The book includes an interesting chapter on the cultivation of digitalis, which the author desires Spanish pharmacists to undertake. It takes up in turn the botany and pharmacognosy of the drug, its evaluation, and the isolation and chemistry of its active principles, and discusses the pharmaceutic preparation of the various pharmacopeias, the pharmacodynamics, the toxicology, the therapeutic uses and the methods of administration in a thoroughgoing conservative and yet modern manner.

PROCTOSCOPIC EXAMINATION AND THE TREATMENT OF HEMORRHOIDS AND ANAL PRURITUS. By Louis A. Buie, B.A., M.D., F.A.C.S., Section on Proctology, the Mayo Clinic, Rochester, Minnesota. Mayo Clinic Monographs. Cloth. Price, $3.50. Pp. 178, with 72 illustrations. Philadelphia: W. B. Saunders Company, 1931.

This book is one of a series of monographs published under the direction of the Mayo Clinic. The author is well known to the medical profession for his work in proctology and presents in a small volume mainly his personal views on the subject mentioned in the title. He describes in detail the technic of rectal and sigmoidal examination, the type of table, methods of preparation of the patient and the indications for examination. He emphasizes the points that proctoscopic and stool examination must be made even though the bowels are constipated because he has found pathologic stools even under such conditions. He believes that infection is the cause of hemorrhoids and states that 48 per cent of all patients with complaints referable to the bowel have hemorrhoids. He quotes statistics and facts pertaining to hemorrhoids from a study made by his associate Dr. George E. Malmgren on 1,000 patients operated on and on the microscopic study of 100 typical specimens. The statement that 80 per cent of 854 patients with uncomplicated hemorrhoids had pain should read 70 per cent. This is undoubtedly a typographic error. There is no record of malignancy in any specimen removed. Dr. Buie favors sacral anesthesia and regards general anesthesia as the least desirable. He describes the manner of preparation, technic of operation and the after-care

in great detail. He attributes the fear of operation by the patient to the poor work of surgeons and the neglect of after-care. The subject of pruritus ani is covered quite completely. The author refers to idiosyncrasies in diet as a possible cause. Would it not be better to speak of these idiosyncrasies as allergic manifestations, as they have been shown to be by many physicians? The manner of treatment by subcutaneous alcohol injections has yielded 84 per cent complete relief and all but the remaining 3 per cent more or less partial relief. The book is well illustrated and well written.

THE DENTAL BOARD OF THE UNITED KINGDOM. FOUR LECTURES ON "THE ÆTIOLOGY OF IRREGULARITY AND MALOCCLUSION OF THE TEETH." By Professor J. C. Brash, M.C., M.A., M.D., University of Birmingham. With an appendix "Concerning Orthodontic Problems and Their Solution," by Miss M. L. Tildesley. Cloth. Price, 5/–. Pp. 274, with 195 illustrations. London: Dental Board of the United Kingdom [n. d.].

This is not a textbook of the conventional type, nor is it a textbook on orthodontia. It is a book devoted to a thorough discussion of the etiology of irregularity and malocclusion of the teeth. It is divided into four lectures, prepared for and delivered at four different dental hospitals under the auspices of the Dental Board of the United Kingdom. It would be an injustice to the author if preference were given to any portions of these exceedingly well balanced lectures in this discussion. A good impression of the contents of this book may be offered by citing the four problems, as given in the appendix by Miss Tildesley:

1. By exactly what standard is "rightness" to be measured?
2. What is the cause of divergence from this standard?
3. What means, if any, are to be used to bring individual divergent jaws into conformity with the standard set up?
4. Is any tendency to divergence that may exist in the population generally due to circumstances that it would be possible to change?

All the material in this book deals with biologic facts gathered from a study of both man and animal. All the problems dealt with certainly concern the well informed orthodontist. Little space is devoted, however, to orthodontic treatment. This is the first book that stresses properly the hereditary factors related to orthodontic problems. The author has successfully undermined many of the orthodontists' widely accepted hypotheses. Only two will be referred to: that irregularities are a concomitant of civilization, and that the presence of adenoids, the absence of nasal breathing, or the constant habit of mouth breathing has anything to do with deformities of the jaws and palate. While the author has made little effort to force conclusions, he has adequately shown that orthodontia is still an empiric science. His observations may serve to explain why the orthodontists so frequently meet with disappointment after years of painstaking efforts.

RECENT ADVANCES IN MEDICINE: CLINICAL, LABORATORY, THERAPEUTIC. By G. E. Beaumont, M.A., D.M., F.R.C.P., Physician, with charge of Out-patients, Middlesex Hospital, and E. C. Dodds, M.V.O., M.D., Ph.D., Courtauld Professor of Biochemistry in the University of London. Sixth edition. Cloth. Price, $3.50. Pp. 442, with 51 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1931.

This has all the merits of the previous editions and contains much new material. Many of the recent tests are given in detail and the latest work in the laboratory and in the clinical and therapeutic fields is fully discussed. It is especially good because an able clinician and a biochemist have collaborated in covering an enormous field in a concise, clear text. There is an excellent bibliography at the end of each chapter. The book should prove valuable not only to the practicing physician but to all laboratory workers.

PRATIQUE MÉDICO-CHIRURGICALE. Publiée sous la direction de A. Couvelaire, A. Lemierre, Ch. Lenormant, professeurs à la Faculté de médecine de Paris. Tome VII. Poignet-Sinus. Tome VIII. Sirops-Zona. Third edition. Boards. Price, 150 francs per volume. Pp. 1123 & 1162, with illustrations. Paris: Masson & Cie, 1931.

The first six volumes of this encyclopedia have already been reviewed. The last two volumes cover the subject matter from "Poignet" to "Zona." The high standard of treatment found in the first volumes has been maintained throughout the entire series. The discussions are laconic, well organized and adequately illustrated. This work can be recommended to serve the purpose intended by its authors, as a valuable reference work.

Medicolegal

Jurisdiction of Court of Equity Over Licensure

(Drummond v. Rowe (Va.), 156 S. E. 442)

The appellees, duly licensed veterinary surgeons, filed a bill in equity against the state board of veterinary examiners and Drummond, to revoke the certificate authorizing Drummond to practice veterinary medicine. The trial court declared the certificate void, and Drummond appealed to the Supreme Court of Appeals of Virginia.

The appellees contended that the certificate had been issued by the board illegally, in that the board had not required Drummond to pass an examination. It was admitted that the case was novel and that there was no direct authority to support the contention of the appellees, who based their claim to the aid of a court of equity on the maxim that equity will not suffer a wrong to be without a remedy. In their contention, said the appellate court, the appellees overlooked the fact that "wrong," in this connection, means an invasion of property or civil rights of the party who seeks the aid of a court of equity. If it be conceded that the granting of the certificate was illegal, what injury did the appellees suffer thereby? They alleged that they would suffer a financial loss if Drummond were permitted to practice under his certificate, that they were duly registered veterinarians and as such were interested in maintaining the high standard of their profession and that they were citizens of Virginia who were interested in upholding the law.

The regulation of the practice of veterinary medicine, said the court, is purely a statutory matter. The legislature may at any time repeal all the statutes on this subject and leave that profession without any regulation in the commonwealth. The appellees had no vested right which would be affected by such repeal. The prospective financial loss complained of by the appellees is the diminution of fees if Drummond continues to practice. Their complaint the court thought untenable, for, as was said in Merz v. Murchison, 30 Ohio Cir. Ct. R. 646,

> Prescribing who may practice medicine, is designed to protect the public, and notwithstanding some incidental benefits result to those having the necessary qualifications to practice, by excluding others not qualified, it is not intended to confer special privileges upon licensed practitioners, for the protection of which as a property right they may invoke equitable aid to restrain unlawful competition by unlicensed practitioners.

The legislature has provided that the unauthorized practice of veterinary medicine is a misdemeanor, punishable by criminal prosecution. It has not declared the practice of veterinary medicine without a license to be a statutory nuisance, nor is it contended that the acts complained of will constitute in fact either a public or a private nuisance. The legislature has not extended the jurisdiction of courts of equity to cover situations such as that now presented, and for the court to assume jurisdiction when a case does not come within settled equitable rules would be to usurp a legislative function. A court of equity will not assume jurisdiction at the instance of a private individual who shows no special damages for the sole purpose of declaring one act of a quasi judicial board illegal. The decree of the trial court declaring Drummond's certificate void was therefore reversed and the case dismissed.

Neglect in Attempt to Extract Tooth

(Prevey v. Watzke (Minn.), 234 N. W. 470)

The plaintiff instituted this action against the defendant, a dentist, alleging malpractice in attempting to remove an impacted wisdom tooth. The trial court gave judgment for the plaintiff for $12,000. The Supreme Court of Minnesota affirmed that judgment.

The plaintiff, suffering with an impacted wisdom tooth, consulted the defendant, who advised its extraction and undertook the operation. According to the defendant's testimony, the work done by him occupied one hour, while the evidence on the part of the plaintiff placed the time at one and one-half to two hours. The impacted tooth was of a medium size with a single straight root. The defendant, in his attempt to remove the tooth, used a lancet, forceps, an elevator, and a bore driven by an electric

engine. He did not remove the tooth, although he told the plaintiff and her brother that he did so. When asked for the tooth, he stated it had been broken up and thrown away. He did remove some pieces of bone. A few days later, suffering great pain and discomfort, the plaintiff consulted another dentist practicing in the same locality as the defendant. This dentist extracted the tooth easily in about five minutes, prying it out with an elevator. There were no marks on the tooth, indicating that it had not been touched by the defendant's instruments. This dentist found that the flesh had not been cut away from the tooth, nor was there any opening in it. "In the right rear inside of the roof of the mouth, he found a hole 1¼ inches deep and one-half inch in diameter." It was beyond the immediate area and vicinity of the tooth to be removed. In making this hole, bone, muscles and blood vessels had been crushed and removed, and the palatine nerve severed. None of the defendant's witnesses attempted to show that his work was performed properly or in the usual way. It might even be, said the court, in the absence of any satisfactory explanation, that the defendant's work was so manifestly wrong that intelligent laymen might so find without expert testimony. The defendant was employed to extract a tooth, observed the court, not to dig a hole in the roof of the plaintiff's mouth. The question of the defendant's negligence was for the jury. Its finding of negligence was, in the opinion of the court, overwhelmingly established by the evidence. While on the witness stand, the defendant voluntarily asserted that he attempted to remove the tooth from the inside of the mouth and that that method consituted good practice. There was no error in thereafter admitting evidence from qualified experts that that method did not constitute good practice.

Before the defendant operated on the plaintiff, she was in good health. Following the operation she became irritable, nervous and melancholy. For about six weeks she had a very disagreeable infection in her throat. She suffered a loss of hearing in her right ear. She lost all sensation in the upper right side of her mouth and in the right back part of her tongue, which condition was permanent. She could open her mouth only one half of the normal extent and had difficulty in eating and swallowing. For four weeks after the operation she continuously had severe pains back of her right ear in the region of her mastoid process. Afterward such pains came at intervals of a day apart, then a week or two weeks apart, and generally lasted about twelve hours. There was no change for the better during the six months preceding the trial. From this "partial recital" of her injuries attributable to the negligence of the defendant, said the Supreme Court of Minnesota, it cannot be said that a verdict of $12,000 was excessive.

Hospitals: Sanatoriums for Treatment of Nervous Diseases Not Nuisances Per Se; Zoning Regulations.—A zoning ordinance of Los Angeles provides that outside of certain designated districts it shall be unlawful for any person, firm or corporation "to erect, establish, maintain or conduct any hospital, asylum, sanitarium, home, retreat or other place for the care of insane persons, persons of unsound mind, or persons affected by or suffering from mental or nervous diseases." At the time of the passage of the ordinance, the plaintiffs operated, in a district within which the zoning ordinance forbade their operation, four sanatoriums for the treatment of nervous diseases. No insane persons were admitted in the sanatoriums. The plaintiffs sought to enjoin the enforcement of the ordinance. It is settled, said the Supreme Court of California, that where a penal statute causes irreparable damage to property rights, the injured party may attack its constitutionality by an action to enjoin its enforcement. A properly conducted sanatorium for the treatment and care of persons affected with mental or nervous diseases does not, per se, constitute a nuisance. Whether or not the plaintiffs' sanatoriums were actually conducted as nuisances was in the opinion of the court wholly immaterial. The ordinance affects all such institutions in the same manner, irrespective of whether they are conducted properly or improperly. Zoning ordinances, when reasonable in object and not arbitrary in operation, constitute a justifiable exercise of police power. The Los Angeles ordinance, so far as it prohibits the future establishment of hospitals for the treatment of nervous diseases in certain districts and permits their establishment in other specified districts, is valid. The businesses so restricted are proper subjects of such regulation. But, said the court, where an ordinance such as the one under consideration is retroactive and causes substantial injury to a prohibited business which is not a nuisance, the ordinance is to that extent an unreasonable and unjustifiable exercise of police power and is invalid.—*Jones v. City of Los Angeles (Calif.), 295 P. 14.*

Workmen's Compensation Acts: Compensability of Tuberculosis.—Under the workmen's compensation act of Maryland, any aggravation or acceleration of a disease or infection by an injury resulting in disability is compensable. If there is no evidence of an accident causing or accelerating the disease, no compensation is allowed for the disease. In the present case, the employee was engaged in mixing poultry and dairy food. The operation of mixing the feed caused the atmosphere of the room in which the employee worked to be impregnated with dust, which at times was quite thick. Becoming sick, the employee consulted a physician and was advised that he was suffering from pulmonary tuberculosis. In an action to obtain compensation from his employer, he contended that the inhalation of dust in the room in which he worked aggravated his condition. It was admitted, said the Court of Appeals of Maryland, that the employee was suffering from tuberculosis and that the disease made its appearance during the period of his employment. There was no evidence, however, of any accident within the meaning of the workmen's compensation act and compensation should not have been granted.—*Cambridge Mfg. Co. v. Johnson (Md.), 153 A. 283.*

Gifts: Presumption as to Mental Capacity of Donor.—The presumption with respect to gifts is that the donor thereof has mental capacity. Capacity relates to soundness of mind or to a mind that has full and intelligent knowledge of the act engaged in, an intelligent perception and understanding of the disposition made of property, and the persons and objects one desires to be the recipients of one's bounty. Old age, sickness, distress, or debility of body do not prove or raise a presumption of incapacity to make a gift, nor do inability to transact business, physical weakness, peculiar beliefs and opinions, or failure of memory. Incapacity as a fact must appear before the gift can be set aside.—*In re Null's Estate (Pa.), 153 A. 137.*

Privileged Communications: Reports of Physical Examinations Under the War Risk Insurance Act.—Reports of the physical examination of a veteran, made under the authority of the director of the Veterans' Bureau, are not confidential nor privileged when required to be produced in an action instituted by the veteran under the provision of the War Risk Insurance Act to collect on an insurance policy issued under that act.—*United States v. Cole (C. C. A.), 45 Fed. (2d) 339.*

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine, New Orleans, November 18-20. Dr. Benjamin Schwartz, P. O. Box 131, Pennsylvania Avenue Station, Washington, D. C., Secretary.

Association of American Medical Colleges, New Orleans, November 30-December 2. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, New Orleans, November 30-December 2. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

New York State Association of Public Health Laboratories, Albany, November 6. Miss M. B. Kirkbride, New Scotland Avenue, Albany, Secretary.

Philippine Islands Medical Association, Manila, December 15-18. Dr. A. S. Fernando, 817 Taft Avenue, Manila, Secretary.

Radiological Society of North America, St. Louis, November 30-December 4. Dr. I. S. Trostler, 25 East Washington Street, Chicago, Secretary.

Southern Medical Association, New Orleans, November 18-20. Mr. C. P. Loranz, Empire Building, Birmingham, Alabama, Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., December 8-11. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Branch of American Urological Association, San Francisco, Nov. 6-7. Dr. H. W. Howard, 193 Eleventh St., Portland, Ore., Sec'y.

Western Surgical Association, Denver, December 4-5. Dr. Frank R. Teachenor, 306 East Twelfth Street, Kansas City, Mo., Secretary.

Current Medical Literature

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American Journal of Medical Sciences, Philadelphia

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American Journal of Surgery, New York

13: 431-637 (Sept.) 1931

*Simultaneous Ligation of Vein in Ligation of Large Arteries: Experimental Study. D. A. Mulvihill, Brooklyn; S. C. Harvery, New Haven, Conn., and V. Doroszka, Patchogue, N. Y.—p. 431.

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*New Method of Treating Chronic Ulcer of Leg. I. S. Tunick and D. H. Kling, New York.—p. 524.

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Tumors of Kidney with Especial Reference to Hypernephromas. L. W. Smith and H. W. Ferris, New York.—p. 552.

Resection of Kidney: Six Cases. N. P. Rathbun, Brooklyn.—p. 565.

Prostate Pack for Controlling Hemorrhage Following Prostatectomy. H. L. Foss, Danville, Pa.—p. 571.

Simultaneous Ligation of Vein and Artery.—In a review of the clinical literature, Mulvihill and his associates noted a belief in the high incidence of gangrene in human beings following ligation of the large arteries. Since 1916, many surgeons have advocated the policy of simultaneous ligation of the accompanying vein when a large artery was ligated. This procedure was thought to aid in the establishment of collateral circulation and to decrease the incidence of gangrene. The experimental literature does not furnish any definitely proved sound physio-

logic basis for the procedure of simultaneous vein ligation. The authors' experiments on seven dogs indicate that simultaneous ligation of the vein has no demonstrable effect in aiding or retarding the development of collateral circulation as shown by the temperature curve at the periphery of an extremity of which the main artery has been ligated.

Esophageal Rupture.—According to Smead, rupture of the esophagus may follow vomiting. Serious damage to the esophagus has followed the vomiting of pregnancy. The ruptured esophagus has often been abnormal before the rupture. Probably a normal esophagus can be ruptured by vomiting. Rupture of the esophagus from vomiting can occur only when the stomach is full. Abdominal pain, soreness and muscle spasm suggest intra-abdominal pathologic changes. Thoracic pain, dyspnea, cyanosis, emphysema of the neck, and physical signs in the chest following vomiting should suggest esophageal rupture. In rupture into the pleura, thoracotomy is imperative. The author reports a case of spontaneous rupture of the esophagus following vomiting.

Ulcer Treatment.—Tunick and Kling believe that chronic ulcers of the leg are caused by thrombosis and infiltration of the capillaries and stagnation in the smaller veins. A fibrotic ring surrounds the ulcer and cuts it off from the normal blood supply, thus preventing healing. Injection of physiologic solution of sodium chloride through the edges is able to break down the fibrotic ring and promote the formation of healthy capillaries and granulations. This method was also successful in the treatment of sloughs following the injection treatment of varicose veins by the sclerosing solutions; in fact, in the sloughs the authors treated by this method the healing was extremely rapid.

American Review of Tuberculosis, New York

24: 371-489 (Oct.) 1931

Results of Open-Air Treatment of Surgical Tuberculosis. W. S. Halsted. —p. 371.

Undulant Fever and Pulmonary Tuberculosis: Report of Two Missed Cases. A. L. Briskman, Colorado Springs, Colo.—p. 446.

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Annals of Medical History, New York

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Phineas Fletcher and Francis Quarles and the Purple Island of Phineas Fletcher. S. W. Lambert, New York.—p. 568.

Annals of Otol., Rhinol. and Laryngology, St. Louis

40: 651-986 (Sept.) 1931

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Auditory Tests in Cases of Marked or Complete Unilateral Deafness. C. C. Bunch, St. Louis.—p. 748.

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Amateur Cinematography in Technical Teaching. A. W. Proetz, St. Louis.—p. 860.

Symposium on Cancer of Esophagus: Diagnosis and Treatment: I. Roentgenologic Aspects. E. C. Ernst, St. Louis.—p. 870.

II. Esophagoscopic Aspects. C. Jackson, Philadelphia.—p. 886.

III. Surgical Aspects. E. A. Graham and H. C. Ballon, St. Louis. —p. 895.

Tracheal and Esophageal Compression as Result of Adenomatous Goiter. H. J. Moersch, Rochester, Minn.—p. 909.

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Suppuration of Petrous Pyramid: Pathology, Symptomatology and Surgical Treatment. S. J. Kopetzky and R. Almour, New York.—p. 922.

Annals of Surgery, Philadelphia

94: 321-480 (Sept.) 1931

*Differentiation of Organic and Spastic Vascular Occlusions. G. de Takáts, Chicago.—p. 321.

*Compression of Lumbosacral Roots of Spinal Cord by Thickened Ligamenta Flava. E. B. Towne and F. L. Reichert, San Francisco.—p. 327.

Fractures of Upper Jaw and Malar Bone. R. H. Ivy and L. Curtis, Philadelphia.—p. 337.

Gastro-Intestinal Obstruction: Functional and Organic. G. Stout, Los Angeles.—p. 347.

Application and Interpretation of Blood Sugar Time Curves in Diagnosis and Treatment of Surgical Infections of Gallbladder and Biliary Passages. I. M. Rabinowitch and A. T. Basin, Montreal.—p. 354.

Rapid High-Temperature Deaths Following Biliary-Tract Surgery. F. G. Connell, Oshkosh, Wis.—p. 363.

Cholecystostomy, with Especial Reference to Postoperative Morbidity and Function. E. L. Eliason and L. K. Ferguson, Philadelphia.—p. 370.

Cancer of Uterus, with General Remarks on Pathologic Aspects of Cancer of Uterus. J. B. Deaver and S. P. Reimann, Philadelphia.—p. 381.

Aspiration of Joint Effusions. D. H. Kling, New York.—p. 389.

Internal Derangements of Knee. B. F. Buzby, Camden, N. J.—p. 397.

Behavior of Alcohol-Preserved Fascia Lata of the Ox, Autogenous Fascia and Chromicized Kangaroo Tendon in Dog and in Man. G. W. Horsley, Richmond, Va.—p. 410.

Improved Armamentarium for Fracture Reduction and Retention. E. P. Heller, Kansas City, Mo.—p. 422.

Differentiation of Vascular Occlusions.—De Takáts believes that the time honored classification of intestinal obstruction into mechanical and dynamic occlusions is admirably suitable to peripheral vascular occlusions. Mechanical or organic occlusions obstruct the lumen with a clot, constrict it through a narrowing of the wall, or compress it from the outside. Dynamic occlusions may be due to vessel spasm, but also to vessel paralysis, which produces stasis in erythromelalgia. The following classification has been used by him with advantage: (1) mechanical occlusions, which are divided into two groups, namely, acute (traumatic and embolic) and chronic (degenerative arteriosclerosis and inflammatory thrombo-angiitis obliterans), and (2) dynamic occlusions, which are also divided into two groups, namely, spastic (Raynaud's disease, cervical rib or spina bifida and endocrine disorders) and paralytic erythromelalgia. The question whether an arterial occlusion is organic or spastic in origin or whether an organic occlusion is aggravated by a superimposed spasm is of more than academic interest. The differentiation will be a decisive factor in treatment.

Compression of Lumbosacral Roots of Cord.—Towne and Reichert report a new cause of compression of the lumbosacral roots of the spinal cord and give two illustrative case histories. The condition is a proliferation of the ligamenta flava between laminae of the lumbar spine, which eventually causes a block in the cerebrospinal fluid circulation and compression of the cauda equina. The etiology is unknown. The pathologic process is a simple hypertrophy of the ligamenta flava. Extradural compression may be suspected from the position and shape of the iodized poppy-seed oil shadows. The symptoms of compression of the cauda equina were cured by surgical removal of the thickened ligaments.

Archives of Neurology and Psychiatry, Chicago

26: 247-468 (Aug.) 1931

Contralateral Flexor Reflex, Rebound Phenomena, Co-Contraction and Reciprocal Innervation in Spinal and in Decerebrate Cats. S. W. Ranson and J. C. Hinsey, Chicago.—p. 247.
Elastic Layer in Cerebral Vessels: Studies of the New-Born and of Children. C. R. Tuthill, Buffalo.—p. 268.
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Nonsuppurative, Nonepidemic Encephalitis Following Labor and in Puerperium: Case Probably Due to Cerebral Anoxemia. J. C. Yaskin, Philadelphia.—p. 371.

Archives of Ophthalmology, Chicago

6: 329-488 (Sept.) 1931

Surgical Entity of Muscle Recession. P. C. Jameson, Brooklyn.—p. 329.
*Lesions of Cornea and Conjunctiva in Erythema Exudativum Multiforme (Hebra): Three Cases with Grave Ocular Sequelae. J. H. Bailey, Brooklyn.—p. 362.
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Unusual Corneal Opacity: Case. O. Sitchevska, New York.—p. 398.
Medullated Nerve Fibers Associated with Choroiditis: Case with Preliminary Studies on Cause of Appearance of Medullated Nerve Fibers in Retina. M. L. Berlinger, New York.—p. 404.
Metastasis in Sheath of Optic Nerve from Carcinoma of Stomach. I. Goldstein and D. Wexler, New York.—p. 414.
*Posttraumatic Tuberculous Uveitis. F. B. Fralick, Ann Arbor.—p. 420.

Erythema Exudativum Multiforme.—Bailey calls attention to the fact that erythema exudativum multiforme not infrequently implicates the eyes. The ocular pathologic process varies from hyperemia to destruction of tissue, in the latter instance often necessitating enucleation of the bulb. The corneal complications, which are responsible for the visual disaster, are delayed in their onset and insidiously progressive. In those cases in which, in spite of the virulence of the process, the eyeballs do not require removal, characteristic sequelae remain; namely, symblepharon, xerosis, a peculiar, stringy, viscid, conjunctival discharge and the aforementioned corneal lesions or the latter only. The disease is a distinct clinical entity and presents all the characteristics of an acute infectious disease. The caption herpes iris conjunctivae, under which the disease was early described, is doubtless the cause for its remaining in obscurity so long and being ignored in the textbooks. Lately, the author has been using large doses of bacterial vaccines intravenously with some promise of success.

Tuberculous Uveitis.—According to Fralick, tuberculous uveitis may develop in an apparently healthy person as a result of trauma to the eye. As a result of the trauma, a latent tuberculosis is aroused into activity and a tuberculous lesion becomes localized at the site of the injury, the micro-organisms having been carried there from a focus elsewhere in the body, or injury has simply aggravated a lesion which was previously present in the uvea but did not give symptoms. The generally recognized omnipresence of tubercle bacilli in the human system and the part played by the condition of the body as exemplified in general and local resistance cannot be ignored, and it is here that injury by reducing resistance comes in as a possible factor in the development of the tuberculosis.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

12: 453-510 (Aug.) 1931

Clinician's Idea of Ultraviolet Dosage. N. E. Titus, New York.—p. 453.
Advances in Electrosurgery: Part I. H. A. Kelly, Baltimore.—p. 461.
Advances in Electrosurgery: Part II. Extensive and Inoperable Malignancy. G. E. Ward, Baltimore.—p. 463.
Effects of Super-High-Frequency Radio Current of Health of Men Exposed Under Service Conditions. W. H. Bell and D. Ferguson, Washington, D. C.—p. 477.

California and Western Medicine, San Francisco

35: 145-248 (Sept.) 1931

Some Costs of Illness Problems. J. H. Graves, San Francisco.—p. 145.
Some Economic Aspects of Modern Medicine. D. Crosby, Oakland.—p. 147.
Is Socialization Inimical to American Medicine? R. Brown, Santa Barbara.—p. 152.
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Public Health Center. J. L. Pomeroy, Los Angeles.—p. 163.
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Medical Licensure in California: Twenty-Five Years Ago and Today. C. B. Pinkham, San Francisco.—p. 167.
*Circulatory Changes During Spinal Anesthesia. M. H. Seevers and R. M. Waters, Madison, Wis.—p. 169.
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Nephroptosis: Its Diagnosis and Treatment. J. J. Crane, Los Angeles.—p. 201.
Internal Ring in Oblique Inguinal Hernia. A. R. Dickson, Los Angeles.—p. 204.
Bladder Tumors: Clinical Manifestations: Cases. L. C. Jacobs and A. Epsteen, San Francisco.—p. 207.
Nongonorrheal Endocervicitis and Vaginitis. D. A. Dallas, San Francisco.—p. 212.
*Pylorectomy and Gastro-Enterostomy—in One Operation. A. W. Collins, San Francisco.—p. 216.
Lure of Medical History: A Twelfth-Century Treatise on Surgery. S. L. M. Rosenberg, Los Angeles.—p. 220.

Spinal Anesthesia.—Seevers and Waters present experimental evidence that cellular oxygen want per se is one of the prime factors in the circulatory depression accompanying spinal anesthesia. A decrease in the oxygen content and an increase in the carbon dioxide content of the blood are present when the blood pressure is low in spinal anesthesia. Under high spinal anesthesia with some degree of intercostal paralysis, the circulatory condition is improved when oxygen-rich air is inhaled. The fall of blood pressure in spinal anesthesia tends to be synchronous with and proportional to the amount of intercostal muscle paralysis produced. Efficient two-phase artificial respiration will maintain normal blood pressure in the presence of cord section at the seventh cervical segment or motor and sensory root paralysis of the whole central nervous system by procaine hydrochloride. Under high spinal anesthesia, even when the blood pressure has been sustained with ephedrine, there is hypersensitivity to anoxemia. No primary asphyxial rise in systolic pressure occurs. Ephedrine in varying dosage tends to maintain normal blood pressure when administered previous to induction of high spinal block. After the blood pressure drop in high spinal anesthesia, ephedrine is less prompt and less effective if administered other than by intravenous injection. When low blood pressure is present from causes other than spinal paralysis, such as extensive hemorrhage or prolonged anoxemia, ephedrine may fail to restore blood pressure even when given intravenously. A high oxygen content of the blood augments the beneficial effect of ephedrine. The authors have not yet seen evidence of circulatory or other damage from ephedrine if the dose is limited to that sufficient to restore normal blood pressure, provided the tissues are adequately oxygenated. Cord section at the fifth thoracic segment or complete procaine paralysis below this point does not produce marked change in blood pressure in the normal dog. With the present knowledge, treatment of accidents following spinal anesthesia should consist of two-phase artificial respiration (preferably with oxygen) plus the intravenous administration of ephedrine in such dosage that the blood pressure is maintained at the preanesthetic level. Existing fluid deficit should of course be made good. Circulatory depression following high spinal anesthesia with intercostal paralysis is much more marked in animals anesthetized with barbital, ethylene or nitrous oxide,

or having morphine and scopolamine as a preoperative sedative, than in the unanesthetized animal.

Pylorectomy.—According to Collins, diet and the removal of occult foci of infection may cure peptic ulcers in early stages. Gastro-enterostomy has proved effective in mild cases of hyperacidity when medical care has failed. Gross pathologic changes in or on either side of the pylorus must be removed by excision. Cancer of the stomach is more common than in any part of the body. Ulcer of the pylorus usually precedes carcinoma. Removal of the pylorus with part of the stomach and duodenum removes the seat of predilection to cancer. Gastro-enterostomy leaves two openings, one of which will cease to function. Gastro-enterostomy may produce a vicious circle and also make the patient more prone to jejunal ulcer. Removal of ulcer and cancer-bearing area and gastro-enterostomy at one operation is a rational and logical operation if the technic can be simplified to remove all danger of hemorrhage, leakage and prolonged complicated operative procedures. The author believes the technic he describes is so simple, rapid and devoid of possible postoperative complications that the operation can be completed as a one-stage procedure.

Canadian Medical Association Journal, Montreal

25: 255-384 (Sept.) 1931

*Jaundice and Application of van den Bergh and Urobilinogen Tests. I. M. Rabinowitch, Montreal.—p. 255.
Metastatic Growths in Ureter: Three Cases. D. W. MacKenzie and M. Ratner, Montreal.—p. 265.
*Method of Palliative Treatment of Carcinoma of Esophagus. D. W. G. Murray, Toronto.—p. 271.
Indications for Cholecystic Surgery. A. R. Monroe, Edmonton.—p. 276.
Lumbar Ramisection and Ganglionectomy. D. U. McGregor and A. I. Olmstead, Hamilton, Ont.—p. 279.
Importance of Anomalies of Superior Vena Cava in Man. J. Beattie, Montreal.—p. 281.
Treatment of Hypertension. J. Meakins and W. DeM. Scriver, Montreal.—p. 285.
Treatment of Acute Intestinal Intoxication. Pearl Summerfeldt, T. G. H. Drake and A. Brown, Toronto.—p. 288.
*Simple and Effective Treatment for Infection with Trichomonas Vaginalis. J. R. Goodall, Montreal.—p. 292.
*Gonococcal Vaccination in Cases of Infantile Vulvovaginitis. W. G. Terwilliger, Montreal.—p. 294.
Urinary Infections of Pregnancy. R. A. McComb, Toronto.—p. 296.
*Lead Poisoning in Brass and Bronze Foundries. F. G. Pedley and R. V. Ward, Montreal.—p. 299.
Some Remarks on Chronic Suppurative Otitis Media: Its Prevention and Treatment. J. R. Page, New York.—p. 303.
Exophoria and Esophoria. A. E. MacDonald, Toronto.—p. 306.
Oxygen in Treatment of Tuberculosis. H. T. R. Count, Rochester, Minn.—p. 309.
Roentgen Rays as Complement to Actinotherapy. H. Humphris, London.—p. 311.
Unexpected Autopsy Findings in Unexpected Deaths. W. J. Deadman, Hamilton, Ont.—p. 317.

Jaundice.—Rabinowitch presents in brief form a summary of the knowledge of jaundice from the point of view of bile pigment formation. That laboratory data are sometimes incompatible with clinical observations led to the combined use of the van den Bergh and urobilinogen reactions and a new method of interpreting the results. So far, at least, the theory appears to fit the clinical facts.

Carcinoma of Esophagus.—According to Murray, intubation of carcinoma of the esophagus, especially in its middle third, is a palliative measure that can be carried out with little danger. It provides relief from symptoms, i. e., obstruction to swallowing and mucus in the throat, for periods up to ten months. The individual is able to take any sort of food naturally and enjoy society generally. With one exception ten patients observed by the author were able to return to their former occupations for periods varying from three to ten months.

Trichomonas Vaginalis Infection.—The treatment presented by Goodall was prompted by the ineffectiveness and long duration of the generally accepted treatment. It consists in using an acid antiseptic in a medium which will slowly dissolve, thereby keeping the vagina in a constant bath of disinfectant. These two factors are obtained by using vaginal cones of 1 per cent trinitrophenol. A cone should be inserted high up in the vault on retiring. A simple neutral or acid douche should be used once daily. After the third treatment with the cone, the whole vulva becomes stained a pale yellow, owing to the trinitrophenol. Ordinarily there is a strong tendency for the disease to recur immediately after the next or subsequent menstruation; a renewal of the cone treatment brings this recrudescence under control. The author so far has treated twenty-two patients by this method—four of these during pregnancy; three in the puerperium. The results have been uniformly successful. The average course of treatment is from five to ten days, and owing to its great simplicity it is not irksome. The pruritus usually disappears during the first three treatments and the pus is generally absent after the fifth or sixth day. Desquamation goes on for some time afterward. By the tenth day the mucosa has taken on a healthy appearance. The treatment may also be carried out during pregnancy, provided it is not too near the period of the expected onset of labor The distress from trichomonas infection during pregnancy is worse than at any other time. Should treatment begin just before menstruation, the daily insertion of the cone should continue throughout the period and for some days afterward. It is the author's opinion that trinitrophenol is a specific in trichomonas infection, owing to the satisfactory, rapid and almost constantly permanent results obtained from its use.

Infantile Vulvovaginitis.—Terwilliger reports the results he obtained in a baby hospital in the treatment of forty-two infants with vulvovaginitis by means of gonococcal vaccination When the infected children received their second or third dose of vaccine they showed an exacerbation of signs and symptoms; then they began to improve and in sixteen cases a cure resulted. During treatment of infected patients by vaccine, fresh cases sent to the ward did not cause an exacerbation of signs and symptoms as was the case before vaccine therapy was started. By the provocative effect of vaccine therapy, silent carrier cases were converted into florid clinical cases, thus making the diagnosis of such cases evident. All noninfected children given the vaccine remained free from infection. It was difficult to measure the degree of immunity produced. However, seven months after the last inoculation these patients were still uninfected and the institution was free from infection for the first time in five years.

Lead Poisoning.—Pedley and Ward report that thirty-eight men engaged in the founding of high lead bronze were sent to the Montreal General Hospital for various complaints. Twenty-four of these were found to be suffering from acute lead poisoning, nine others showed definite evidence of lead absorption, and only five showed no signs of plumbism. Three brass polishers who succeeded one another on the same emery wheel became poisoned with lead. Blood smears of twenty-six men engaged in the polishing of low lead brass and bronze (less than 6 per cent) were examined. Five of these showed stippled cells, well in excess of 200 per million red cells. The analysis of air in one foundry showed the concentration of lead in the air to be about 0.85 mg. per cubic meter. The authors' review of the literature of chronic brass poisoning indicated that many cases of chronic disability occur among founders and polishers of brass, and that the symptoms recorded are closely allied to those of lead poisoning. It is their belief that lead plays an important part in the disease picture variously diagnosed as brass poisoning, bronze poisoning and copper poisoning.

Canadian Public Health Journal, Toronto

22: 379-432 (Aug.) 1931

Radium—Its Proved Uses and Limitations in Therapy. G. E. Richards, Toronto.—p. 387.
Study of Epidemic Catarrhal Jaundice. R. Fraser, Sackville, New Brunswick.—p. 396.
Classification of Maternal Deaths. Helen Macmurchy.—p. 412.

22: 433-484 (Sept.) 1931

Control of Communicable Diseases in Rural Areas by Immunization. F. W. Jackson, Manitoba.—p. 433.
*Further Studies of Etiology of Acute Intestinal Intoxication in Infants and Children. Marion M. Johnston, A. Brown and Mildred J. Kaake, Toronto.—p. 441.
Grosse Isle Quarantine Station. J. D. Pagé, Ottawa.—p. 454.
B C G Vaccine. A. C. Rankin, Alberta.—p. 459.
Refrigeration and Its Health Aspect. G. H. Ferguson, Ottawa.—p. 457.

Acute Intestinal Intoxication in Infants and Children.—In 67 cases of sickness in infants hospitalized under the clinical diagnosis of acute intestinal intoxication in 53, infectious diarrhea in 1, fermentative diarrhea in 4, dysentery in 1, and under other terms in 8, the stool characteristics, in regard

to blood and pus, are compared by Johnston and her assistants with the bacteriologic observations and with the clinical diagnoses. Comparable data are given for 29 older children with similar but more varied diagnoses. Blood and pus, or either of these, were found as often under one clinical diagnosis as under any other but were absent in some cases of proved dysentery infection. It is shown, therefore, that the presence or absence of blood or pus is not an infallible criterion on which to base a differential diagnosis. From the 67 infants, 10 strains of Bacillus dysenteriae Sonne, 6 of B. dysenteriae Hiss-Russell, 5 of B. dysenteriae Flexner, 26 of B. schmitzii, 4 of B. asiaticus, and 3 of B. paratyphosus B were isolated. From the 29 older children, 10 strains of B. dysenteriae Sonne, 4 of B. dysenteriae Hiss-Russell, 3 of B. dysenteriae Flexner, 3 of B. schmitzii, and 1 of B. paratyphosus B were recovered. Similar organisms were obtained from cases of diarrhea occurring in infants brought to the outpatient department and to child welfare clinics. The carrier state of dysentery infection in infants and adults was demonstrated. Flies were shown to be possible vectors of these organisms. The same species of pathogenic organisms was isolated from infants in the hospital and from household contacts who, in some cases only, gave a history of recent diarrhea. On the basis of their observations the authors conclude that acute intestinal intoxication is an enteral infection; the term is synonymous with infectious diarrhea, dysentery, summer diarrhea and so on. Many cases of so-called fermentative diarrhea are of the same type. The causative organisms are members of the colon-paratyphoid paradysentery group.

Endocrinology, Los Angeles

15: 265-356 (July-Aug.) 1931

*High Incidence of Hypertension in Toxic Goiter and in Myxedema. W. O. Thompson, Chicago; Lois F. N. Dickie, A. E. Morris, Worcester, Mass., and B. H. Hilkevitch, Chicago.—p. 265.
*Bearing of Recent Work on Anterior Pituitary Hormones on Gynecologic Problems, with Especial Reference to Disorders of Menstruation. E. Novak, Baltimore.—p. 273.
Notes on Relation of Iodine to Goiter. J. F. McClendon, Minneapolis.—p. 281.
Case of Diabetes Insipidus Occurring as Sequel to Epidemic Encephalitis. R. W. Whitehead and W. Darley, Denver.—p. 286.
Familial Hypothyroidism. E. K. Shelton, Santa Barbara, Calif.—p. 297.
Studies on Pituitary Functions. O. Riddle, Cold Spring Harbor, N. Y.—p. 307.
Placental Hormones. J. B. Collip, D. L. Thomson, J. S. L. Browne, M. K. McPhail and J. E. Williamson, Montreal.—p. 315.
Variations in Susceptibility of Albino Rat to Tetania Parathyropriva. M. M. Hoskins, New York.—p. 324.
Preparation of Adrenal Cortical Hormone. J. J. Pfiffner and W. W. Swingle, Princeton, N. J.—p. 335.

Hypertension in Goiter and Myxedema.—According to Thompson and his associates, the incidence of hypertension appears to be greater in patients with toxic goiter, and in patients with myxedema after the metabolism has been restored to normal by appropriate treatment, than in the general population. A diastolic pressure of 100 mm. of mercury or over in both thyrotoxicosis and myxedema before treatment makes it practically certain that a hypertension exists independently. In patients with toxic goiter, if the systolic pressure is 190 mm. of mercury or over before treatment, it is probable that it will be 150 or over after treatment. In ten of fifty-three cases in which a hypertension was present after treatment, the systolic pressure rose to the hypertensive level only after the basal metabolism had been restored to normal. In about 45 per cent of the cases in which the diastolic pressure ranged from 70 to 99 mm. of mercury before treatment, the systolic pressure was 150 or more after treatment. In no case in which the systolic pressure was below 130 mm. of mercury before treatment, and in no case in which the diastolic pressure was below 60, was a hypertension present after treatment.

Anterior Pituitary and Menstruation.—Novak believes that in the treatment of amenorrhea the most logical plan would be the hypodermic injection of folliculin followed by similar administration of progestin. Since the latter is not available for human use, its place may perhaps, for the time being, be taken by anterior pituitary luteinizing hormone. This plan of treatment produces no permanent stimulating effect on the ovary. There is need for a rational treatment of the adiposogenital dystrophy. For the present one must content oneself with the empiric or semiempiric administration of thyroid extract, perhaps some form of ovarian therapy for the amenorrhea, and rather random efforts at a causal therapy by the use of pituitary preparations. In functional bleeding Novak and Hurd have obtained excellent results in a large series of cases, many of the patients being young women in whom the only alternative would have been surgery or radiotherapy. The treatment consists of the intramuscular injection of a luteinizing hormone prepared from the urine of pregnant women, by a new technic (to be reported). Other subjects discussed as illustrating the application of scientific research to clinical problems are the pregnancy tests of Aschheim and Zondek, Friedman and others. These are of value also in determining the completeness or incompleteness of removal of trophoblastic tissue in operations for incomplete miscarriage, hydatidiform mole or chorio-epithelioma.

Georgia Medical Association Journal, Atlanta

20: 335-373 (Sept.) 1931

Common Errors in Treatment of Heart Disease. J. B. Herrick, Chicago.—p. 335.

Illinois Medical Journal, Chicago

60: 181-268 (Sept.) 1931

Rôle of Prophylaxis in Obstetrics. F. F. Maple, Chicago.—p. 193.
*Lowering Mortality After Operations on Biliary Tract. E. A. Graham, St. Louis.—p. 196.
Medical Profession and Health Department. A. J. McLaughlin, Chicago.—p. 202.
*Tularemia: Summary of Recent Investigations and Consideration of the Dayton Experience with Eighty-Eight Cases. W. M. Simpson, Dayton, Ohio.—p. 207.
Tuberculosis of Skin. C. White, Chicago.—p. 215.
Heart Disease, Prevention and After-Care. I. C. Riggin, New York.—p. 219.
Lymphosarcoma of Cecum: Case. L. Handelman, Chicago.—p. 224.
Studies in Catatonic States: Effects of Treatment on Colloids of Blood in Catatonics. Leah Lurie, F. LeBlanc and C. F. Read, Elgin.—p. 277.
*Regarding Etiology of Chickenpox. H. MacDonald and Edith MacDonald, Evanston.—p. 230.
Undulant Fever: (Mimic Disease). R. O. Stites, Industry, Ill.—p. 232.
Blood Chemistry, Toxemia and Mechanics of Advanced Intestinal Obstruction, with Deductions on Treatment. W. D. Gatch, Indianapolis.—p. 236.
Needless Arm Injuries. D. F. Clark, Evanston, Ill.—p. 244.
Symptoms and Treatment of Pyelitis. J. W. Visher, Evansville, Ind.—p. 245.
Diagnosis of Spinal Cord Lesions. E. Sachs, St. Louis.—p. 248.
Ophthalmia Neonatorum. N. K. Lazar, Chicago.—p. 250.
Value in Bedside Nursing in Public Health Program. Margaret McGreevy, La Salle.—p. 254.
Roentgen Ray in Diagnosis of Thoracic Pathology. H. H. Cole, Springfield.—p. 260.
Evaluation of Diagnostic Methods in Gastro-Intestinal Disease. L. D. Snorf, Chicago.—p. 262.

Lowering Mortality After Operations on Biliary Tract.—Graham believes that the condition of the liver is a matter of great importance in determining the operative mortality after cholecystectomy. Even in cases without jaundice and without a stone in the common duct the liver is occasionally so badly damaged and its functions are accordingly so much impaired that it seems to be impossible for a patient to survive even a simple cholecystectomy. The present methods of estimating the condition of the liver are doubtless crude in comparison with methods which will be available in the future. The determination of the excretory function of the liver by means of such a substance as phentetiothalein sodium seems to be of considerable help in gaging the suitability of a patient for operation. The administration of adequate amounts of carbohydrate in order to insure a good reserve of glycogen in the liver will so improve the hepatic condition that a dangerous case will be converted into a safe one. There is ordinarily a high incidence of pulmonary atelectasis after operations on the gallbladder. This can be prevented to a great extent by the postoperative administration of carbon dioxide. By utilizing these methods of gaging the operative mortality and of improving the condition of the patient, the author's own hospital mortality after the operation of cholecystectomy has been reduced from 6 per cent to 0.4 per cent.

Tularemia.—Simpson calls attention to the fact that within the past five years tularemia has risen from comparative obscurity to the position of a major public health problem.

Recent reports from Norway and Russia, together with previous reports from Japan and England, indicate that the disease is probably world-wide in its distribution. Newly discovered animal hosts and insect vectors indicate the ever-widening spread of the disease and further insure its perpetuation. Many new sources of human infection other than the wild rabbit have been described. Eighty-eight cases of tularemia have been encountered by the author, eighty-four of which have occurred in or about Dayton, Ohio. This represents the largest number of cases to be discovered in such a circumscribed area. The gross and microscopic pathologic changes in tularemia as it occurs in man and animals are briefly described, together with a description of the experimental production of the ulceroglandular, oculoglandular and glandular forms of the disease in guinea-pigs. Eight recently encountered cases of tularemia are reported for the first time. The use of immune human serum appears to have a favorable effect on the course of the disease.

Etiology of Chickenpox.—Confirmatory to the report of Auricchio, the MacDonald's found a micro-organism (Micrococcus varicellae) in smear preparations of intact vesicle lymph and successfully grew it in pure cultures from the vesicles and blood of seven successive cases of chickenpox. They report the successful production of chickenpox in one child on the eighteenth day after oral administration of a pure culture. A morphologically and culturally similar micrococcus was regained from the patient's vesicles and blood. Complement fixation tests on convalescent blood, with the micrococcus as antigen were positive. While the possibility of the presence of an additional and invisible virus in the medium was not eliminated, it appears reasonable to believe that the organism described is pathogenic and the causative bacterium of chickenpox.

Journal of Comparative Psychology, Baltimore

12: 1-135 (June) 1931

Studies in Individual Differences in Maze Ability: II. Determination of Individual Differences by Age, Weight, Sex and Pigmentation. R. C. Tryon, San Francisco.—p. 1.

Relation of Electrical Changes in Brain to Reflex Activity. L. E. Travis and R. Y. Herren, Iowa City.—p. 23.

Relative Efficacy of Form and Background in Chick's Discrimination of Visual Patterns. N. L. Munn, Pittsburgh.—p. 41.

Forward-Going Tendency in Maze Running. J. F. Dashiell and A. G. Bayroff, Chapel Hill, N. C.—p. 77.

Studies in Individual Differences in Maze Ability: III. Community of Function Between Two Maze Abilities. R. C. Tryon, San Francisco. —p. 95.

Note on Fear Behavior in Young Rats, Mice and Birds. W. N. Kellogg, Bloomington, Ind.—p. 117.

Behavior of Fish in Elevated Water-Bridges Connecting Adjoining Aquaria. W. R. Miles, San Francisco.—p. 123.

Standardizing Electric Shocks for Rats. K. Dunlap, Baltimore.—p. 133.

Journal of Experimental Medicine, New York

54: 295-451 (Sept.) 1931

On Specificity of Serologic Reactions with Simple Chemical Compounds (Inhibition Reactions). K. Landsteiner and J. van der Scheer, New York.—p. 295.

Typhus Fever: III. Behavior of Rickettsia Prowazeki in Tissue Cultures. H. Pinkerton and G. M. Hass, Boston.—p. 307.

Differentiation Between Certain Toxic Properties of Filtrates of Hemolytic Staphylococcus Aureus. J. T. P. Weld and Anne Gunther, New York.—p. 315.

Growth and Death of Tissue Cultures Exposed to Supranormal Temperatures. G. Pincus, Cambridge, Mass., and A. Fischer, Berlin-Dahlem, Germany.—p. 323.

Induced Development and Histogenesis of Plasma Cells. F. R. Miller, New York.—p. 333.

Swine Influenza: I. Experimental Transmission and Pathology. R. E. Shope, Princeton, N. J.—p. 349.

Id.: II. Hemophilic Bacillus from Respiratory Tract of Infected Swine. P. A. Lewis and R. E. Shope, Princeton, N. J.—p. 361.

Id.: III. Filtration Experiments and Etiology. R. E. Shope, Princeton, N. J.—p. 373.

Specific Cytotoxic Action of Tuberculin in Tissue Culture. J. D. Aronson, Philadelphia.—p. 387.

Histopathology of Nutritional Encephalomalacia of Chicks. A. Wolf and A. M. Pappenheimer, New York.—p. 399.

Production of Refractory State as Concerns Shwartzman Phenomenon by Injections of Venom of Moccasin Snake (Ancistrodon Piscivorus). S. M. Peck and H. Sobotka, New York.—p. 407.

Is Rat Dermatitis Consequent on Vitamin B_2 (G) Deficiency True Pellagra? S. S. Gurin and W. H. Eddy, New York.—p. 421.

Chemo-Immunologic Studies on Conjugated Carbohydrate Proteins: IV. Synthesis of *p*-Aminobenzyl Ether of Soluble Specific Substance of Type III Pneumococcus and Its Coupling with Protein. W. F. Goebel and O. T. Avery, New York.—p. 431.

Id.: V. Immunologic Specificity of Antigen Prepared by Combining the Capsular Polysaccharide of Type III Pneumococcus with Foreign Protein. O. T. Avery and W. F. Goebel, New York.—p. 437.

Some Ultraviolet Photomicrographs of B. Subtilis. R. W. G. Wyckoff and Adrian L. Ter Louw, New York.—p. 449.

Journal of General Physiology, Baltimore

15: 1-118 (Sept.) 1931

Viscosimetric Method of Estimating Enzyme Concentration with Especial Reference to Amylase. W. R. Thompson, C. E. Johnson and R. Hussey, New Haven, Conn.—p. 1.

Effect of Radiations from Mercury Arc in Quartz on Enzymes: II. Effect of Ultraviolet Radiation on Amylase in Solution. W. R. Thompson and R. Hussey, New Haven, Conn.—p. 9.

Geotropic Excitation in Helix. H. Hoagland and W. J. Crozier, Cambridge, Mass.—p. 15.

Presence of Gelatin-Liquefying Enzyme in Crude Pepsin Preparations. J. H. Northrop, Princeton, N. J.—p. 29.

Studies on Milk Secretion: Influence of Inanition. J. W. Gowen and E. R. Tobey, Princeton, N. J.—p. 45.

Mechanism of Milk Secretion: Influence of Insulin and Phlorhizin. J. W. Gowen and E. R. Tobey, Princeton, N. J.—p. 67.

Temperature Characteristics for Production of CO_2 by Germinating Seeds of Lupinus Albus and Zea Mays. P. Tang, Cambridge, Mass. p. 87.

Rôle of Phosphate in Biologic Oxidations. M. Rarmore and J. M. Luck, Palo Alto, Calif.—p. 97.

Insensitivity of Paramecium to Cyanide and Effects of Iron on Respiration. C. S. Shoup and J. T. Boykin, Nashville, Tenn.—p. 107.

Journal of Lab. & Clinical Medicine, St. Louis

16: 1151-1260 (Sept.) 1931

Influence of Yeast on Protein Metabolism in Normal and Depancreatized Dogs. E. S. Nasset, H. B. Pierce and J. R. Murlin, Rochester, N. Y. —p. 1151.

Relationship of Type of Radiant Energy to Its Activation of Vitamins in Yeast. L. H. Horstad, St. Louis.—p. 1169.

Notes on Bacillus Welchii. A. S. Schlingman, Detroit.—p. 1175.

Arteriosclerosis of Coronary Arteries: Clinicopathologic Study. D. C. Sutton and W. W. Brandes, Chicago.—p. 1185.

Case Report of Extensive Atrophy of Subcutaneous Fat Following Repeated Injections of Insulin. J. R. Williams, Rochester, N. Y. —p. 1191.

Electrocardiographic Studies on Chick Embryo Hearts: I. A Technic for Recording Electrical Changes in Isolated Chick Embryo Hearts. H. Pollack, Boston.—p. 1194.

Id.: II. Amplifying Device for Use with String Galvanometer. H. Pollack, M. Dionne and E. Schafer, Boston.—p. 1198.

Journal of Nervous & Mental Disease, New York

74: 265-392 (Sept.) 1931

Consideration of Sacral Epidural Injections for Relief of Sciatic Pain. F. G. Lindemulder, Ann Arbor, Mich.—p. 265.

Thyroid Psychosis: Difficulties in Diagnosis. S. D. Ingham and J. M. Nielsen, Los Angeles.—p. 271.

Insulin and Nonspecific Therapy—A Common Mechanism: "The Nonspecific Syndrome." J. I. Margolis, New York.—p. 278.

Case of Illuminating Gas Poisoning with a Number of Neuropsychiatric Sequelae, the Main Being Peripheral Neuritis and Parkinsonism. J. Notkin and N. Savitsky, New York.—p. 293.

Isolated Bilateral Trigeminal Nerve Disease Presumably Syphilitic in Origin. A. M. Ornsteen, Philadelphia.—p. 297.

Translations on Interrelationships Between Psychic and Vegetative Functions. W. R. Hess, Zurich, Switzerland.—p. 301.

Journal of Nutrition, Springfield, Ill.

4: 305-442 (Sept.) 1931

Basal Metabolism Standards: Statistical Comparison of Their Prediction Values. R. L. Jenkins, Chicago.—p. 305.

Effect of Vitamins A and D on Resistance to Infection. L. C. Boynton and W. L. Bradford, Rochester, N. Y.—p. 323.

Studies in Protein Nutrition of the Chick: I. Influence of Different Protein Concentrates on the Growth of Baby Chicks, When Fed as Source of Protein in Various Simplified Diets. W. D. McFarlane, W. R. Graham, Jr., and G. E. Hall, Guelph, Canada.—p. 331.

Effects of Radiant Energy on Experimental Hemolytic Anemia. H. S. Mayerson and H. Laurens, New Orleans.—p. 351.

Physiologic Effect of Rations Restricted Principally or Solely to Alfalfa Plant: II. Cystine as Limiting Factor in Nutritive Value of Alfalfa Proteins. J. R. Haag, Corvallis, Ore.—p. 363.

Determination of Basal Metabolism of Albino Rat from Insensible Loss of Weight. J. A. Greene and R. P. Luce, Ann Arbor, Mich.—p. 371.

Factors Which Determine Renal Weight: XII. Nitrogen Intake as Varied by Addition of Urea to Diet. Lois Lockard MacKay, E. Mackay and T. Addis, San Francisco.—p. 379.

Glycogen Formation and Respiratory Quotients in Rats Fed Exclusively on Fat. D. E. Gregg, Rochester, N. Y.—p. 385.

Food Intake in Pregnancy, Lactation, and Reproductive Rest in Human Mother. Carroll F. Shukers, Icie G. Macy, Eva Donelson, Betty Nims and Helen A. Hunscher, Detroit.—p. 399.

Glycogen and Fat Formation in Rats: V. Carbohydrate-Free Diets. Esther M. Greisheimer, Minneapolis.—p. 411.

Distribution of Manganese in Foods. W. H. Peterson and J. T. Skinner, Madison, Wis.—p. 419.

Journal of Urology, Baltimore

26: 327-498 (Sept.) 1931

*Acquired Renal Dystropia or Movable Kidney. F. Kidd, London. —p. 327.
*Laboratory Methods for Diagnosis of Gonorrhea in Male. R. D. Herrold, Chicago.—p. 379.
Acute Gonorrheal Urethritis: Its Prevention and Treatment. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 387.
Diagnosis and Treatment of Complications of Acute Gonorrhea in Male. H. S. Jeck, New York.—p. 395.
Chronic Prostatitis. H. Culver, Chicago.—p. 401.
*Stricture of Urethra. J. R. Caulk, St. Louis.—p. 407.
Chronic Seminal Vesiculitis. J. F. McCarthy, New York.—p. 415.
*Ureteroheminephrectomy in Infancy. M. F. Campbell, New York.—p. 433.
Gunshot Wound of Ureter: Case. R. M. le Comte, Washington, D. C.. —p. 447.
Experiences with Submucous Fibrosis of Bladder. G. G. Smith, Boston. —p. 455.
Encrusted Cystitis. W. M. Kearns and S. M. Turkeltaub, Milwaukee. —p. 465.
Case of Osteomyelitic Abscess with Fistula into Urinary Bladder. A. de la Pena, Madrid, Spain.—p. 473.
Two Cases of Leiomyoma of Prostate. F. Hinman and J. J. Sullivan, San Francisco.—p. 475.
Improved Lighting of Young's Punch and Diathermy to Control Bleeding Following the Punch Operation. H. L. Tolson, Cumberland, Md. —p 485.
New Cystoscope for Retrograde Fulguration. T. M. Davis, Greenville, S. C.—p. 491.
New Self-Retaining Catheter. S. L. Lemel, Cleveland.—p. 497.

Acquired Renal Dystopia.—Kidd reviews the types of renal dystopia and formulates a fresh hypothesis which attributes the most important pathologic type to the persistence from neolithic times of a racial stock of Egyptian origin and descent. The importance of the intra-abdominal pressure is minimized, and the importance of the suspensory ligaments of the kidney is emphasized. The pathology of movable kidney is placed on a fresh plane and is brought into line with the pathology of sprains and deformities. Pyelography is advocated as the only real guide to treatment and as the indicator of the reasons for success and failure of operations. The author describes an operation for renal dystopia and outlines the points essential for success in operating.

Diagnosis of Gonorrhea in Male.—Herrold believes that single stain smears are sufficient in new infections in the presence of acute clinical symptoms and signs. The absence of negative smears in the presence of suggestive clinical symptoms should be followed by further examinations before a definite negative diagnosis is made. The presence of large numbers of bacteria, with or without typical intracellular or extracellular diplococci in the single stain, should be corroborated during the same examination by a gram stain. If all observations then suggest a gonorrheal infection, it is advisable that culture should be made. If the culture proves negative, provocative measures may be used more safely, after which more smears and cultures should be made. The types of patients most frequently in this class are: first, nongonorrheal infections associated with stricture or chronic prostatitis; second, those individuals who have had some previous local medication, and, third, the patient with a definite history of infection during the previous year. In suspected exacerbations of chronic infections when smears are doubtful the patient should not be subjected to instrumentation, massage or provocative measures until after further clinical observation. Smears and cultures are complementary, and positive smears may occur with negative cultures, and, conversely, positive cultures may be obtained in the presence of negative smears. Gonococci sometimes exist in a saprophytic state and it is here that cultures are of the greatest usefulness. The value of cultures is directly proportional to the care in the collection of specimens, and the efficiency of the medium, together with the application of optimal physical conditions for growth. Reference is made to a simplified and satisfactory blood agar medium for the growth of the gonococcus. As a rule, nothing can be learned by serologic methods that cannot be found better by smears and cultures, but serologic tests may be useful in the differentiation of systemic complications, associated with so-called postgonorrheal infections in the genito-urinary tract. Similarly, skin reactions are inferior to smears and cultures as diagnostic procedure. In the male, other bacteria that need most common differentiation from gonococci in smears and cultures are variants of staphylococci and other gram positive diplococci with similar morphology.

Stricture of Urethra.—Caulk summarizes the salient features of the subject of stricture of the urethra thus: Gonorrhea is the most frequent cause of stricture formation in the urethra. Injudicious treatment with strong irritating medicaments predisposes to its development. Appropriate treatment during the acute stage and supervision during the chronic stage with particular attention to the adnexa minimizes the incidence of its occurrence. Latency and chronicity of infection must be combated by treatment of the vesicles and prostate. Muscle spasm is apt to prove deceptive in assessing the nature of a stricture. Whenever possible, strictures should be dilated gradually and repeatedly. Divulsion is to be condemned. Operative procedures should usually be reserved for its complications. Because of the pronounced tendency of urethral regeneration, plastic procedures except in rare instances are seldom necessary. The recurrence of stricture is likely. The time of recurrence is difficult to predict; hence periodic supervision is essential. The mortality of stricture is low and occurs usually in neglected cases and results from sepsis or renal disease.

Ureteroheminephrectomy in Infancy.—Campbell reports two cases of female infants aged 6 and 28 months in whom ureteroheminephrectomy was successfully carried out for ureterohemipyonephrosis. An ectopic ureteral opening was present in one and at first served to increase the diagnostic difficulties. Ectopic ureteral openings because of urinary leakage usually cause the child to be classed as enuretic. The patient is the seventh reported of this type in whom ureteral ectopy did not result in urinary incontinence. In case 2, hydroureter and hydropyonephrosis existed above the site of a congenital ureterovesical junction stricture. The treatment of hemipyonephrosis is surgical. Even infants withstand radical operations on the urinary tract surprisingly well if strict attention is paid to preoperative and postoperative care; one should bear in mind that severe acidosis is likely to develop during the first forty-eight hours following operation.

Kansas Medical Society Journal, Topeka

32: 289-324 (Sept.) 1931

Sinus Problem. H. E. Marshall, Wichita.—p. 289.
Vitamins. J. A. Wheeler, Newton.—p. 292.
Migraine and Its Treatment with Ketogenic Diet. W. C. Menninger, Topeka.—p. 298.
Spinal Fluid Cell Counts—Staining Solution. D. V. Conwell, Halstead. p. 301.
Case of Filaria Sanguinis-Hominis. H. W. Gilley, Ottawa.—p. 302.
Letters from a Kansas Doctor to His Son. J. A. Dillon, Larned.— p. 304.

Kentucky Medical Journal, Bowling Green

29: 451-520 (Sept.) 1931

Treatment of Morphine Addiction by Blister Fluid Injection. W. D. Reddish, Lexington.—p. 504.
Gynatresia: Case. W. E. Fallis, Louisville.—p. 507.
Some Newer Aspects of Bacterial Allergy. G. M. Lawson, Louisville. —p. 509.
Allergy Due to Cutaneous Absorption. F. A. Simon, Louisville.—p. 510.
Pollens. A. C. McCarty, Louisville.—p. 512.
Food as Related to Allergy. L. Palmer, Louisville.—p. 515.

Laryngoscope, St. Louis

41: 591-662 (Sept.) 1931

Hemorrhage Into Esophagus at Birth and in Adult. H. P. Mosher, Boston.—p. 591.
Preliminary Report of Study of Philogenesis and Ontogenesis of Footplate of Stapes, with Theory of Otosclerosis. L. K. Guggenheim. —p. 623.
Prevention of Acute Surgical Mastoiditis. A. Wagers, Philadelphia. —p. 630.
Report of Case of Acute Mastoiditis Complicated by Internal Hydrocephalus. F. C. Carr, New York.—p. 635.
Mastoiditis in Presence of Unsuspected Diabetes. Case.—p. 638.
Acute Mastoiditis Associated with Hematuria. M. S. Ersner and E. K. Mitchell, Philadelphia.—p. 646.
Carcinoma of Larynx: Unusual Case. L. H. Clerf, Philadelphia.—p. 650.
Exposure of Simulated Deafness by Bone Conduction Tests. B. M. Becker, Brooklyn.—p. 653.
Lymph Hemangioma of Nose, Palate and Tongue. M. A. Zacks, Philadelphia.—p. 656.

Maine Medical Journal, Portland

22: 153-172 (Sept.) 1931

Treatment of Endocarditis—(*a*) Rheumatic, (*b*) Bacterial. T. D. Jones, Boston.—p. 154.
Treatment of Cardiovascular Syphilis. J. M. Faulkner, Boston.—p. 159.
Treatment of Continued Arterial Hypertension and Some of Its Late Effects. R. S. Palmer, Boston.—p. 164.

Military Surgeon, Washington, D. C.

69: 259-378 (Sept.) 1931

Recent Contribution to War Planning: Army Medical Bulletin No. 24. H. C. Gibner.—p. 259.
Recent Advances in Our Knowledge of Dengue Fever. J. S. Simmons.—p. 266.
Preoperative and Postoperative Treatment in Surgery of Stomach. J. A. Bethea.—p. 287.
Dietetic Economics and Administration in Military Hospital. E. McDavid.—p. 294.
New Uses of Sulphur in Medicine. F. J. Vokoun.—p. 304.
Swimming Pools, Simple and Satisfactory Treatment. E. L. Ruffner.—p. 306.
Treatment in Aborted Cases of Acute Gonorrhea. W. J. Manning.—p. 309.
Institution of Definitive Treatment in Tuberculous Filipino Soldier. L. R. Poust.—p. 312.

Missouri State M. Assn. Journal, St. Louis

28: 407-462 (Sept.) 1931

Acute Intestinal Obstruction. A. Ochsner, New Orleans.—p. 407.
Diagnosis and Management of Injuries to Chest. O. B. Zeinert, St. Louis.—p. 414.
Diagnosis and Management of Injuries to Abdomen. R. F. Hyland, St. Louis.—p. 417.
Some Facts in Regard to Surgical Shock. G. S. Foster, Manchester, N. H.—p. 424.
Tuberculosis of Joints: Conservative Plan of Treatment with Presentation of Patients. C. W. Mercer, Kansas City.—p. 427.
Search for Tuberculosis in School Children: Importance to the Child, to the Parent and to the Community. H. H. Bell, St. Louis.—p. 429.

Oklahoma State Medical Assn. Journal, Muskogee

24: 289-316 (Sept.) 1931

Poisoning from Natural Gas and Its Combustion Products. W. B. Newell, Enid.—p. 289.
Acute and Chronic Antrum Problems. W. Mithoefer, Cincinnati.—p. 292.
Eye Complications Following Head Injuries. C. H. Haralson, Tulsa.—p. 296.
Ocular Symptoms and Complications of Diabetes Mellitus. A. W. McAlester III, Kansas City, Mo.—p. 299.
Ionization. H. F. Vandever, Enid.—p. 302.
Tonsils as Foci of Infection. L. C. Kuyrekendall, McAlester.—p. 303.
Case Reports on Intranasal Operation on Lacrimal Sac. F. R. Vieregg, Clinton.—p. 306.
Unusual Foreign Body in Lung (Pecan Chip): Case. A. H. Davis, Tulsa.—p. 309.

Philippine Journal of Science, Manila

46: 1-158 (Sept.) 1931

Philippine Pine-Needle Oil from Pinus Insularis (Endlicher). Irene de Santos, A. P. West and P. D. Esguerra, Manila.—p. 1.
New or Little Known Tipulidae from Philippines (Diptera): X. C. P. Alexander, Amherst, Mass.—p. 9.
Origin of Irritating Substance in Mosquito Bite. C. Manalang, Manila.—p. 39.
Malaria Transmission in Philippines: III. Density and Infective Density of Anopheles Funestus Giles. C. Manalang, Manila.—p. 47.
Fresh-Water Sponges of Philippine Islands. N. G. Gee, Peiping, China.—p. 61.
Plankton Diatoms from Vladivostok Bay. B. W. Skvortzow, Harbin, China.—p. 77.
Mycetozoa from North Manchuria, China. B. W. Skvortzow, Harbin, China.—p. 85.
Pelagic Diatoms of Korean Strait of Sea of Japan. B. W. Skvortzow, Harbin, China.—p. 95.
Histamine Test as Aid in Diagnosis of Early Leprosy. J. Rodriguez and F. C. Plantilla, Cebu, Cebu.—p. 123.
The Fly Eutrixopsis Javana Townsend (Diptera, Tachinidae), a Parasite of the Beetle Leucopholis Irrorata in Occidental Negroes, Philippine Islands. A. W. Lopez.—p. 129.
Composition of Philippine Kapok-Seed Oil. A. O. Cruz and A. P. West, Manila.—p. 131.
Skeleton of Timarau. M. D. Sumulong, Los Bañnos, Laguna.—p. 141.

Physical Therapeutics, New York

49: 325-364 (Sept.) 1931

An Appreciation of the Life and Work of Dr. William Benham Snow. W. L. Clark, Philadelphia.—p. 330.
Fever Produced by Diathermy: Its Value in Multiple Sclerosis and Other Chronic Diseases. W. H. Schmidt and B. P. Weiss, Philadelphia.—p. 336.

Porto Rico J. Pub. Health. & Trop. Med., San Juan

7: 1-115 (Sept.) 1931

Case Report on Twelve Auchincloss or Modified Auchincloss Operations for Filariasis. J. del Toro, J. A. Pons, R. Rodriguez Molina, Porto Rico.—p. 3.
Case of Hypoplastic Anemia, Pernicious Type, in Course of Sprue, with Frequently Repeated Hematologic Examinations. B. K. Ashford, Porto Rico.—p. 11.
Skin Reactions in Persons Infected with Schistosoma Mansoni. W. H. Taliaferro and Lucy G. Taliaferro, Chicago.—p. 23.
Hypersensitiveness to Hookworm Proteins in Porto Rico. J. E. Stumberg and R. Rodriguez-Molina, Porto Rico.—p. 37.
Intestinal Parasiticides. W. A. Hoffman, Porto Rico.—p. 51.
II. Wassermann Reaction in Leprosy. P. Morales-Otero, Porto Rico.—p. 69.

Public Health Reports, Washington, D. C.

46: 2161-2221 (Sept. 11) 1931

Cooperative Campaign for Eradication of Plague in Peru. J. D. Long.—p. 2161.
Occurrence of a Colony of Tick Parasite Hunterellus Hookeri Howard in West Africa. C. B. Philip.—p. 2168.

46: 2223-2289 (Sept. 18) 1931

*Note on History of Pellagra in United States. G. A. Wheeler.—p. 2223.
Sleeping Car Parking and Sanitation at a Large Convention. G. H. Ferguson.—p. 2229.
Catalytic Action of Copper in Oxidation of Crystalline Glutathione. C. Voegtlin, J. M. Johnson and S. M. Rosenthal.—p. 2234.

Pellagra in United States.—According to Wheeler, it is a question whether the apparent epidemic nature of pellagra has not been overestimated, to the hindrance of some of the earlier investigations undertaken to clear up its etiology. Such prerecognition information as has been brought together offers meager support to the view, perhaps too commonly held, that pellagra made a sudden appearance in the South and quickly assumed epidemic proportions analogous to that of an infectious condition. In view of its undoubted endemic existence prior to that time, and with no reliable means of measuring its incidence before or even since, the generally accepted basic requirements for the recognition of an epidemic are not entirely applicable. However, several observers have been able to see in this situation what they regard as evidence not only of a sudden and explosive appearance but, in a few instances, of a definite radial spread and, apparently on these grounds alone, have held on to the view of infectious origin.

Southern Medical Journal, Birmingham, Ala.

24: 741-836 (Sept.) 1931

Pathologic Conditions Arising in Duplication of Kidney Pelvis and Ureter: Twelve Cases. A. J. Crowell, R. Thompson, B. Squires and B. M. Palmer, Charlotte, N. C.—p. 741.
Fractures in Elbow. W. B. Carrell, Dallas, Texas.—p. 749.
Diverticula of Duodenum. J. T. McKinney, Roanoke, Va.—p. 753.
Foreign Bodies in Food and Air Passages. M. Equen, Atlanta, Ga.—p. 757.
Congenital Tracheo-Esophageal Fistula: Case. V. K. Hart, Charlotte, N. C.—p. 762.
Primary Tuberculosis of Spleen, with Report of Case Simulating Banti's Disease. G. Bunch, Columbia, S. C.—p. 764.
Allergic Manifestations in Children Based on Study of Four Hundred and Eighty-Two Cases. R. M. Balyeat, Oklahoma City.—p. 769.
Secondary Gastric Disturbances Occurring in Pulmonary Tuberculosis. J. Friedenwald and T. H. Morrison, Baltimore.—p. 774.
Modern Methods in Treatment of Pulmonary Tuberculosis. O. O. Miller, Louisville, Ky.—p. 781.
Diagnosis and Treatment of Empyema in Children. B. C. Willis, Rocky Mount, N. C.—p. 785.
Treatment of Ringworm of Scalp with Thallium Acetate. R. L. Kelly, Louisville, Ky.—p. 790.
Changing Behavior of the Maladjusted Child. W. L. Nelson, St. Louis.—p. 793.
General Pathologist and Brain Tumor Problem. C. Phillips, Richmond, Va.—p. 799.
Training, of County Health Department Personnel. J. H. Janney Indianola, Miss.—p. 802.
Why Terminal Cancer? S. S. Marchbanks, Chattanooga, Tenn.—p. 806.
Advantages of a Hospital Association to a Railway Company and Its Employees. R. J. Wilkinson, Huntington, West Va.—p. 811.
Our Midwife Problems. W. E. Levy, New Orleans.—p. 815.
Aschheim-Zondek Test (Friedman's Modification) as Aid in Differentiating Early Pregnancy from Other Pelvic Conditions. B. T. Beasley, Atlanta, Ga.—p. 821.
Congenital Absence of Anal Opening. R. B. Miller, Goldsboro, N. C.—p. 822.
The Didactic Lecture. H. M. Winans, Dallas, Texas.—p. 823.
The Teaching of Therapeutics. J. S. McLester, Birmingham.—p. 825.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

28: 177-262 (July-Sept.) 1931

Neurosis in Childhood. I. M. Allen.—p. 177.
On Incidence of Rheumatic Fever. F. Bach.—p. 198.
Thrombophlebitis Migrans Complicating Scarlet Fever. J. B. Ellison. —p. 207.

British Journal of Urology, London

3: 245-352 (Sept.) 1931

On Torsion of Appendages of Testis and Epididymis. V. W. Dix.—p. 245.
Tuberculous Infection of Adenomatous Prostate. F. S. Patch and G. S. Foulds.—p. 269.
Relation Between Reaction and Bacteria of Urine. L. Sas and E. Szold. —p. 281.
Treatment of Spasm of Ureter and of Ureteral Stone by Ammi Visnaga. K. Samaan.—p. 294.

British Medical Journal, London

2: 519-554 (Sept. 19) 1931

Observations on Cerebral Hemorrhage Due to Causes Other Than Arteriosclerosis. J. Collier.—p. 519.
*Acute Tonsillitis and Some of Its Sequelae: Epidemiologic and Bacteriologic Observations. J. A. Glover and F. Griffith.—p. 521.
Work of a Child Guidance Clinic. B. Hart.—p. 528.
*The Diabetic Acute Abdomen: Typical Case. R. D. Larwence, C. G. Millman and F. E. Pilkington.—p. 530.
Electrical Treatment of Neuritis and Writers' Cramp. W. B. Jones. —p. 531.

Acute Tonsillitis.—Glover and Griffith believe that the following tentative suggestions are justified in view of all the available evidence: 1. Epidemic tonsillitis is one of the most common causes of invalidity in boarding schools and is due to infection with hemolytic streptococci of the Streptococcus pyogenes group. 2. Infection of the throat with hemolytic streptococci produces varying clinical pictures in different persons. These include: first, a symptomless infection, or healthy carrier state; secondly, tonsillitis; thirdly, febricula, feverish catarrh or pharyngitis, without noticeable sore throat; fourthly, scarlet fever. Any of the latter three conditions may be followed by otitis media or by acute rheumatism. 3. Many serologic types of hemolytic streptococci may cause scarlet fever, but certain types, the four "chief" types, predominate. Types 1, 2, 3 and 4 are together responsible for 70 per cent of the cases of scarlet fever admitted to fever hospitals in England, the remaining 30 per cent being caused by strains forming a group of heterogeneous types. 4. Epidemic tonsillitis without rash is generally attributable to strains belonging to the heterogeneous group. These strains cause scarlatina when their toxigenic powers are sufficiently high to overcome the antitoxic immunity of the person attacked. 5. Observations made on two outbreaks of tonsillitis (only one of which has been described) attended with severe complications but without typical scarlatinal rashes suggest that the two chief types concerned, types 1 and 2, may not invariably be of high toxigenicity. 6. In any epidemic of scarlet fever, cases of tonsillitis and mild pharyngitis occur side by side with the cases of scarlet fever, and, if bacteriologic examination is made, numbers of healthy carriers will also be detected, all yielding the same type of hemolytic streptococcus as the scarlatinal cases. These unsuspected sources of infection constitute one of the most difficult problems in the control of scarlet fever. 7. Epidemics of tonsillitis in schools are generally associated with a high carrier rate of hemolytic streptococci. 8. Epidemics of measles and influenza, even in good hygienic conditions, increase the spread of hemolytic streptococci, which are the chief cause of serious complications in these diseases. 9. Often, however, epidemics of tonsillitis and high carrier rates of hemolytic streptococci are signs of the existence of environmental conditions which favor a rapid and easy transmission of infection. Chief of such conditions are too great proximity of beds, deficient floor area and deficient ventilation in dormitories. 10. Adequate spacing and ventilation of dormitories and classrooms, and proper intervals between beds in dormitories and school sanatoriums, are important factors in the prevention of the spread of infection.

Diabetic Acute Condition of Abdomen.—Lawrence and his associates report an extreme case of the acute abdominal condition occasionally associated with severe diabetic ketosis. Intense abdominal pain, tenderness, and rigidity, and a high leukocytosis were present, simulating an acute abdominal condition. All the acute symptoms disappeared within twelve hours of adequate insulin treatment.

Indian Medical Gazette, Calcutta

66: 483-542 (Sept.) 1931

Note on Formation of Leprous Nodules in Human Skin. J. M. Henderson.—p. 483.
Investigation of After-Histories of Sanatorium Patients in India. C. Frimödt-Moller.—p. 484.
Five Cases of Juvenile Megacolon. E. H. Vere Hodge.—p. 488.
Pellagra in Deccan: Report on Forty Cases Occurring Among Lepers at Leprosy Hospital, Dichpali, Hyderabad, Deccan. J. Lowe.—p. 491.
Serum-Formalin Proportion in Aldehyde Test for Kala-Azar. C. R. Das Gupta.—p. 500.

Lancet, London

2: 617-668 (Sept. 19) 1931

Precancerous Lesions of Alimentary Tract. M. J. Stewart.—p. 617.
Outbreak of Rabies in Trinidad, Without History of Bites, and With Symptoms of Acute Ascending Myelitis. E. W. Hurst and J. L. Pawan.—p. 622.
*Should High Blood Pressure be Reduced? I. Harris and C. L. G. Pratt. —p. 629.
Iodine Powder in Treatment of Chronic Otorrhea. N. Asherson.—p. 630.

Should High Blood Pressure Be Reduced?—Harris and Pratt describe tests on twenty-two patients in which they noted that the water-excretion function was definitely depressed as a result of administering pressure-reducing drugs. There was retention of urea, nonprotein nitrogen, phosphates and chlorides in the blood as a result of pressure-reducing drugs, while the alkali reserve was generally lowered. The cardiac function was definitely impaired as the result of the treatment. On the basis of their observations the authors conclude that it is not desirable to administer pressure-reducing drugs as routine treatment in cases of hypertension.

2: 669-722 (Sept. 26) 1931

*Precancerous Lesions of Alimentary Tract. M. J. Stewart.—p. 669.
Nonparasitic Cysts of Liver: Report of Two Cases Together with Case of Cyst of Ligamentum Teres Hepatis. C. P. G. Wakeley and D. J. MacMyn.—p. 675.
Operative Treatment of Hydrocele. A. W. Mooro.—p. 680.
Epithelioma of Esophagus in Association with Achalasia of Cardia. G. Rake.—p. 682.

Precancerous Lesions of Alimentary Tract.—According to Stewart, the precancerous conditions of the alimentary tract are both numerous and varied, though not all of equal importance. In the mouth, leukoplakia of the tongue stands out as the chief precancerous lesion, being present in at least one third of cases of cancer of that organ. It is interesting to note that, whereas about two thirds of the cases of leukoplakia linguae are syphilitic in origin, leukoplakia vulvae, also an important precursor of cancer, bears no relationship to syphilis but depends in part at least on the cessation of ovarian function. In the stomach, chronic gastric ulcer is probably responsible for about one sixth of the cases of cancer, while simple adenomatous polypi account for another 4 or 5 per cent. The connection between chronic gastritis and cancer is not yet clearly established, although there is a certain amount of evidence, both clinical and pathologic, pointing in this direction. Following Hurst, the anatomic distribution of carcinoma of the stomach would suggest that mechanical friction is an important factor in the etiology of this disease. In the liver, multilobular (portal) cirrhosis is the usual precursor of primary cancer. Nine out of ten liver-cell carcinomas originate in cirrrhotic organs, often with the formation of multiple adenomas as an intermediate phase, while the less common bile duct cancer is associated with cirrhosis in about half the cases. In hemochromatosis with its accompanying cirrrhosis the chances of carcinoma arising in the liver are at least as high as in the ordinary multilobular type. The association between cholelithiasis, cholecystitis, and cancer of the gallbladder and larger bile ducts is fully established. Figures are given to show that it is the multiple faceted type of stone which is responsible and not the solitary cholesterol stone, which does not occur with significantly greater frequency in cases of biliary tract cancer than in the control series. The chief precancerous lesion of the large intestine is the benign adenomatous polypus, and, as a subvariety, the rare condition known as familial polyposis. There is no evidence that either diverticulosis or diverticulitis

is etiologically related to cancer, but it is shown that the carcinoid tumor of the appendix arises with greater frequency in the fibrosed and (partially) obliterated organ. There is but scanty evidence in man of a connection between animal parasites and cancer of the alimentary tract. Fibiger's work on spiroptera cancer of the stomach in rats and the investigations of Bullock and Curtis on cysticercus sarcoma of the liver in the same animal have no direct applicability to the human subject. A number of examples of primary carcinoma of the liver and bile passages occurring in association with infestation by flukes have been reported, mainly from Russia and the Far East, and an *a priori* case may be regarded as having been established. Schistosomiasis, certainly the chief cause of the high incidence of carcinoma of the bladder in Egypt, is etiologically unrelated to either carcinoma of the liver or carcinoma of the large intestine. A general conclusion which may reasonably be drawn from these varied observations is the desirability of stressing the importance of local factors in the etiology of malignant disease. At present this constitutes much the most fruitful field of inquiry and the most hopeful line of attack in cancer prophylaxis. So far as the alimentary tract is concerned, the opportunities for the prevention and treatment of precancerous states are fewer than in the case of external cancer, in which the etiologic relationship with various sources of irritation is now well established, but even here something can be done. The study of the racial and geographic incidence of malignant disease, not in general but in respect of particular sites, is still in its infancy. From the little that has already been done it is clear that much may be learned from a detailed study of the environmental factors, climatic, dietetic, habitudinal, parasitic, of the races of mankind. For this purpose accurate statistical information on a large scale, as yet unavailable, is an essential prerequisite. The author concludes by emphasizing the extraordinary width and diversity of the field of cancer research, including as it does the nature, causation, prevention and treatment of the numerous and varied precancerous states of which he has spoken, and many more besides. No one who takes up cancer research should feel that he is committed to a narrow specialty: it is a field of almost illimitable scope, and incidentally an excellent training ground for both pathologist and clinician.

Medical Journal of Australia, Sydney

2: 221-250 (Aug. 22) 1931

Lipiodol in Neurologic Diagnosis. J. F. Mackeddie.—p. 221.
New Method of Osteoplastic Restoration of Skull. P. Pickerill.—p. 228.
Etiology of Convulsions. W. Evans.—p. 229.
Convulsions in Children Under Five Years. E. H. M. Stephen.—p. 231.
Study of Renal Function Following Toxemic Pregnancy. Vera I. Krieger and J. S. Green.—p. 234.
Arachnodactly Associated with Muscular Hypotonia. W. W. Ingram and K. Inglis.—p. 238.

2: 251-282 (Aug. 29) 1931

Bancroft Memorial Lecture: Changing Point of View. F. W. Jones.—p. 251.

Japanese J. Obstetrics & Gynecology, Kyoto

14: 153-266 (June) 1931

Relation Between Menstrual Periodicity and Duration of Pregnancy: I. Menstrual Periodicity of Japanese Women. J. Nakagawa.—p. 154.
Id.: II. Menstrual Periodicity and Duration of Pregnancy. J. Nakagawa.—p. 164.
Birth Injuries in the New-Born: VII. Birth Injuries in Cases of Eclamptic Labor. H. Yagi.—p. 183.
Id.: VIII. Relation Between Asphyxia Neonatorum and Intracranial Hemorrhage. Treatment and Prophylaxis of Birth Traumas. H. Yagi.—p. 191.
An Interesting Instance of Chorio-Epithelioma Malignum Diagnosed by Trophoblast Reaction (Z. A. Reaction of Anterior Pituitary Lobe). T. Shirai.—p. 196.
Experimental Investigation of Effect of Roentgen Rays on Vegetative Nerve: I. General Action of Roentgen Rays, Especially the Relation with Blood Pressure. S. Suzuki.—p. 207.
Id.: Pharmacologic Investigation of Effect of Irradiation on Inferior Mesenteric Ganglion on Uterine Motion. S. Suzuki.—p. 214.
Biologic Study of Radiosensibility: I. Effect of Roentgen Rays on Immature Tissues of Plant. J. Nakagawa.—p. 218.
Pharmacologic Investigation of Blood Vessels of Human Placenta: I. On Existence of Vascular Nerve in Blood Vessels of Human Placenta. K. Ueda.—p. 225.
Case of Hemorrhagic Breasts Complicating Pregnancy. H. Kondo.—p. 233.
On Cause of Hydrosalpinx. T. Kumamoto.—p. 236.

Annales de l'Institut Pasteur, Paris

47: 117-219 (Aug.) 1931

Pathogenic Properties of B C G. A. Boquet.—p. 117.
*Rapid Demonstration of Tuberculous Ultravirus. F. van Deinse.—p. 135.
Antituberculous Vaccination in Algeria. E. Sergent and H. Ducros-Rougebief.—p. 144.
*Serodiagnosis in Leprosy: Agglutinosedimentation of Formolized Sheep Cells. M. C. Rubino.—p. 147.
*Ulcerative Colitis. R. Buttiaux and A. Sévin.—p. 173.

Rapid Demonstration of Tuberculous Ultravirus.—Van Deinse inoculated guinea-pigs intraperitoneally with filtrate of cultures of bovine tubercle bacilli and killed the animals after two to four days. The development of the acid-resistant bacillus from the virus is particularly favored by the presence of pus in the peritoneum. To bring about the formation of pus, calcium phosphate was injected one or two days before the injection of the filtrate. This procedure permits a differential diagnosis between the ultravirus and the bacillary form of the virus in pathologic processes. The ultravirus gives rise to the characteristic masses of the acid-fast bacilli during the first three days after the inoculation; these masses disappear toward the eighth day and the virulent scattered bacilli, never in masses, appear in the peritoneal pus toward the tenth day.

Serodiagnosis in Leprosy.—Rubino finds in the serums of lepers a specific substance which combines with formaldehyde treated sheep cells and causes rapid agglutination and sedimentation. Certain normal or pathologic human serums also possess the property of agglutination and sedimentation of sheep cells. These hetero-agglutinins are attached indifferently to natural or formaldehyde treated sheep cells. This property can be utilized to remove the hetero-agglutinins by fixation with the natural sheep cells before the serum-formaldehyde treated sheep cell test. The test should always be made in the presence of both untreated and treated sheep cells. The reaction should be considered positive when sedimentation of treated cells takes place in less than an hour and is more marked than with the natural untreated sheep cells. It is negative when there is no agglutinosedimentation or when the sedimentation is about equal in the tests in which formaldehyde treated and untreated sheep cells are used. In thirty-six cases of various forms of leprosy, the reaction was positive twenty-seven times, negative seven times and doubtful twice. Three hundred and four serums from persons with various other diseases gave negative reactions with the exception of one from a subject who had made many trips to the colonies and was found to have two large ulnar nerves with tingling in the fingers innervated by them. Later examination proved that the patient harbored a leprous infection.

Ulcerative Colitis.—Buttiaux and Sévin, after many animal experiments, confirm their belief that ulcerative colitis is an infectious process and is of lymphatic origin. Intestinal parasites pave the way for subsequent microbic infection. Following Bargen's technic they isolated, in addition to Bargen's diplococcus, another possibly related diplococcus. Animal experiments and intradermal skin tests led the authors to believe that both strains were specific. Both types of diplococci reproduced the disease in rabbits. However, other organisms may be associated or symbiotic forms. Among the other forms of ulcerative colitis, some are results of organisms, once agents in a general previous infection, that became localized in the colon after a period of latency. Such are the colitis conditions following old Hiss and Shiga dysentery, Friedländer rhinitis, and old paratyphoid Salmonella infections. Bacillus coli or the enterococcus, both common to the intestinal flora, under lowered body resistance or multiple digestive disturbances, may assume virulence and also cause colitis.

Archives des Maladies de l'Appareil Digestif, etc., Paris

21: 777-896 (July) 1931

*Acetylcholine and Gastric Secretion: Treatment of Hypochlorhydria and Prognosis of Anachlorhydria. G. Faroy and R. Deron.—p. 777.
Retroperitoneal Parajejunal Hernias. M. G. Brohée.—p. 794.

Acetylcholine and Gastric Secretion: Treatment of Hypochlorhydria and Prognosis of Anachlorhydria.—Faroy and Deron in their efforts to find a substance that would influence the secretion of gastric juice and yet have no harmful sequelae found that acetylcholine was more satisfactory than

histamine. They found that carefully standardized and stabilized solutions of acetylcholine did not give better results than solutions of the powder prepared just before injection. The authors could draw no conclusions from the study of specimens of fluid obtained fractionally through the Einhorn tube or from the rhythm of the secretion; the figures varied in the same subject from one test to another and in the same series of tests under diverse influences, such as salivation, secretion due to dilution, conditioned reflex, evacuation or pyloric regurgitation. The authors' experiments led to the following observations: 1. Single intramuscular injections of 0.3 to 0.4 Gm. of acetylcholine after the introduction of the Einhorn tube stimulated only a minimal acid secretion comparable to the secretion caused by the stimulatory action of the tube itself and distinctly inferior to the acidity of the secretion when histamine was injected. Therefore, acetylcholine cannot supplement histamine in testing for the presence of gastric secretion. 2. The authors studied the influence of repeated injections of acetylcholine in series consisting of from twelve to fifteen injections administered to both normal and hypochlorhydric persons. In one case of duodenal ulcer the physiologic action of acetylcholine was similar to that produced by insulin or pancreatic extract. In one instance in which an old gastric ulcer had become latent after gastro-enterostomy, apropos of a recent hemiplegia from cerebral softening, one treatment of acetylcholine hastened the return of the gastric pains and forced the suspension of treatment. 3. All the hypochlorhydric conditions, even the more accentuated, have been favorably and rapidly influenced by acetylcholine treatment. A single series of injections is sufficient to reestablish a normal secretion in the mild hypochlorhydric conditions. The authors most often give two series, but when the index of acidity is very low and the lesions very old, three or four series were found necessary. 4. Two elements characterize the awakening or increase of the acid secretion, namely, its prolongation and the increase in the degree of acidity. From a functional point of view, the digestive value of the gastric juice depends more on the continuity and the duration than on the intense but fleeting elevation of the hydrochloric acid secreted. The therapeutic test with acetylcholine, like histamine, permits the separation of anachlorhydric conditions into two types. One type is similar to hypochlorhydria; the acid secretion increases progressively and tends to return to normal—this type consists of relatively anachlorhydric or achylic conditions. The other type has no secretory reaction; it consists of the true anachlorhydric or achylic conditions. The therapeutic test with acetylcholine permits a discrimination between true and relatively anachlorhydric conditions. It was found that the histamine-produced hydrochloric acid value was elevated by subsequent injections of acetylcholine. 5. The mechanism through which acetylcholine influences the gastric secretion is not actually known; but it seems that the vasodilator action is not sufficient explanation. Acetylcholine does not act in the same way as histamine, which gives immediate results. Small serial doses of histamine did not give the same results as acetylcholine and large single injections of acetylcholine did not give the instantaneous results produced by single injections of histamine. The authors believe that the constantly favorable results obtained through their series of acetylcholine injections permit them to recommend the doses actually used in their experiments for treatment.

Paris Médical

2: 101-136 (Aug. 8) 1931

Neurosympathetic Physiopathology of Tissues and Cancer Formation. C. Stajano.—p. 125.
*Serotherapy and Vaccinotherapy in Activation of Pulmonary Tuberculosis. P. Lefévre.—p. 129.
Pleural Calcification: Case. C. Gandy and R. Couder.—p. 132.

Serotherapy and Vaccinotherapy in Activation of Pulmonary Tuberculosis.—Lefévre reviews eight complete and three incomplete case histories and mentions 900 other observations which lead him to the following conclusions: Indiscriminate vaccinotherapy and serotherapy should be discouraged. These measures, although of value and justified, should be used with great discrimination. The author finds that pulmonary tuberculosis in case of serotherapy appears as pulmonary congestion and in case of vaccinotherapy, as more or less transient anergy. The physician who administers antitetanus serum as a routine in cases of insignificant abrasions does not do so without risk. Administration of antidiphtheria serum and antityphoid vaccine should only follow a thorough laboratory and physical, including a roentgen, examination. The possibility of awakening latent tuberculosis should be given consideration.

Presse Médicale, Paris

39: 1229-1244 (Aug. 19) 1931

Vegetative and Ulcerative Chronic Pyodermatitis. L. Hudelo and R. Rabut.—p. 1229.
*Life Cycle of Syphilitic Virus: Is Spirochaeta Pallida Virulent? P. Lépine.—p. 1233.
Restoration of Antero-Internal Dislocation of Shoulder. M. Flipo.—p. 1235.

Life Cycle of Syphilitic Virus: Is Spirochaeta Pallida Virulent?—Lépine summarizes the theories of the etiology of syphilis. Lavaditi and Lépine proved that positive reactions as demonstrated by Wassermann and Meinicke tests are independent of the virulence of the organism, state of the infection or immunity of the host. They proved this by animal inoculations with heat-killed spirochetes. According to recent work Spirochaeta pallida in itself is not the causative agent, but instead a visible and nonvirulent stage in the life cycle of an ultravirus and virulent stage. Observation of human patients and many experimental animals lead the author to the following conclusions: Many syphilitic conditions do not harbor the visible spirochete. Animal experiments prove that in the life cycle of the spirochete there is present a first stage, in which only the virulent invisible agent exists; a second stage, in which there are present both spirochetes and the virulent invisible agents; and the third stage, containing a nonvirulent vegetative form resembling the recurrent spirochete or the spirochete of parasyphilis. The invisible agent is an ultravirus.

39: 1245-1260 (Aug. 22) 1931

Classification of Congenital Syphilis of Bone in Infancy. M. Péhu and A. Policard.—p. 1245.
*Pain Syndromes of Peripheral Nerves: Subarachnoid Alcoholization of Posterior Roots. A. M. Dogliotti.—p. 1249.
Lipoid Nephrosis. L. Ramond.—p. 1255.

Pain Syndromes of Peripheral Nerves.—Dogliotti recommends injections of absolute alcohol in amounts of not more than 0.2 to 0.8 cc. The operation is carried out in the same way as a spinal puncture. Injections are made slowly into the cerebrospinal fluid aimed at the posterior roots between their point of emergence from the spinal medulla and their egress from the dura mater. The needle is introduced into the dorsal or lumbar intervertebral space, in accordance with clinical conditions: from the fourth to the ninth dorsal space for pains in the thorax and upper part of the abdomen as well as the upper limbs; the fourth and fifth lumbar spaces for pains in the lumbosacral and perineal regions. To reach the nerve roots of the arm, the shoulders are raised horizontally from 20 to 30 degrees, so that the alcohol can flow toward the first roots of the thorax and the last cervicals. Sensitivity, warmth at first, then hypesthesia and analgesia, appear immediately and reach the maximum in from twenty to thirty minutes. Muscular disturbances (heaviness of limbs, slight hypotonicity of some groups of muscles) either do not appear at all or are slight or transitory. In twenty-four hours the sensitivity is almost back to normal, leaving only zones of slight hypesthesia, particularly hypalgia, of radicular distribution. The action of the alcohol is more marked on the posterior than on the anterior roots. The patient's position makes this possible. Moreover, a very thin arachnoid velum separates the anterior from the posterior roots. Since the author believes that the posterior nerve roots are the important factors, this is highly desirable. Alcohol has no secondary toxic action; it diffuses rapidly and easily and has a much lower specific gravity than cerebrospinal fluid. The author treated forty-five patients. He concludes that benefit can be derived in neuralgia of the sciatic and other peripheral nerves; ganglionic, funicular and radicular pains of various origin; phantom stump pains in amputation; pains due to tabes; many forms of visceral pains not benefited by other treatment, and pains caused by inoperable cancer (prostate, uterus, breast).

Schweizerische Medizinische Wochenschrift, Basel

61: 741-788 (Aug. 8) 1931

Volatile Poisons. H. Zangger.—p. 741.
New Volatile Poisons. H. Zangger.—p. 748.
Avulsion Fracture of Tuberosity of Tibia. O. Winterstein.—p. 761.
Late Results After Operation on Hallux Valgus. E. Schreiber.—p. 763.
Invasion of Ascarides into Biliary Tract as Fatal Result of Injury. E. Bæumann.—p. 766.
Isolated Fractures of Pisiform Bone. W. Jaeger.—p. 766.
Total Dislocation of Talus. P. Pfaehler.—p. 768.
*Treatment of Sunstroke. Sonderegger.—p. 769.
Influence of Brine Baths on Sequelae of Accidents. O. Hauptli.—p. 770.
*Sunburn: Treatment with Rays of Long Wavelength. F. Bircher.—p. 770.
Somnambulism and Accident. C. Dubois.—p. 771.
Contestable Decision in Lawsuit Regarding Compensation of Invalid. Leipziger.—p. 774.
The Physician's Professional Secrecy. G. Gautschi.—p. 775.

Treatment of Sunstroke.—Sonderegger first differentiates between sunstroke and heat stroke. Sunstroke results from overheating of the head and develops following direct exposure of the head during hot weather, whereas heat stroke is caused by overheating of the entire body and does not necessarily have to be caused by sunlight but may be caused by any other form of heat. The differential diagnosis between the two can usually be based on the anamnesis and on the clinical aspects, but it is also possible that the two conditions concur. In discussing the pathologic anatomy of sunstroke the author states that there is a marked hyperemia of the cerebral meninges, an edema of the cerebral substance and a hydrops meningeae. This intracranial congestion is the result of the direct irradiation of the head, and it explains the manifestations of central excitation and paralysis. That not only the heat rays but also other chemically active rays are responsible for the sunstroke is proved by the greater frequency of sunstroke in the tropics when the sky is cloudy. Since in cases of cerebral pressure manifestations, irrespective of their etiology, good results have been obtained with the intravenous injection of a hypertonic solution of sodium chloride, the author attempted to treat sunstroke in this manner, by injecting 20 cc. of a sterile 20 per cent solution of sodium chloride. He explains the mechanism of this treatment and states that its results were highly favorable. In addition to the injection, other therapeutic measures that have proved helpful should not be neglected. The patient should be given all the water he desires and the significance of perspiration, on account of the cold that is produced by its evaporation, should not be undervalued. In discussing the prophylaxis of sunstroke the author warns against going with uncovered head during the hot season. As the best hat material for protection against sunstroke he considers felt. He states that instead of the cork-lined tropical helmet, double felt hats are now the form of hat most frequently worn in tropical climates.

Sunburn: Treatment with Rays of Long Wavelength.—Recalling that the effects of prolonged exposure to rays of short wavelength, especially to ultraviolet rays, can be counteracted by rays of long wavelength, Bircher treated a patient with severe sunburn by the application of rays of long wavelength. The results were surprisingly favorable.

Giornale di Clinica Medica, Parma

12: 867-952 (Aug. 30) 1931

Clinical and Anatomic Considerations on Hypertrophic Cirrhosis. A. Fontana and R. Reitano.—p. 867.
Some Rare Costal Malformations. A. Casti.—p. 910.
*Initial Phase of Hyperglycemia Due to Ingestion of Dextrose. A. Gasparini.—p. 917.
Oral Treatment in Diabetes. A. Schweitzer.—p. 940.

Initial Phase of Hyperglycemia Due to Ingestion of Dextrose.—Gasparini, studying the manner in which hyperglycemia due to the ingestion of dextrose begins, was able to establish that often hyperglycemia appears early, being manifested after five minutes. But not infrequently he observed an absence of rapid hyperglycemia, the manifestation appearing much later (after twenty minutes). This appears to be observable chiefly in liver patients. Comparing the beginning of hyperglycemia following the ingestion of dextrose with the hyperglycemic reaction due to epinephrine, the author observed that minimal or absent epinephrine hyperglycemia corresponds to the absent early hyperglycemia, and deduced from this fact that the initial phase of the glycemic curve due to ingestion is the result of hepatic glycogenolysis from an enterohepatic sympathetic reflex. He suggests considerations and proofs from which he deduces that the mechanism of the production of such a reflex is analogous to that of epinephrine glycogenolysis.

Rivista di Patologia e Clin. della Tuberculosi, Bologna

5: 617-712 (Aug. 31) 1931

Relations Between Tuberculosis in Children and Tuberculosis in Adults. D. Pacchioni.—p. 617.
Filtrable Forms of Tubercle Bacilli. A. Cuturi and C. Lanza.—p. 627.
*Cutaneous Atrophic Striation in Pulmonary Tuberculosis. C. Alessandri.—p. 635.
Relative Value of Manometric Indications in Certain Cases of Pneumothorax. M. Mazzetti.—p. 653.
Acute Clinical Beginning of Pulmonary Tuberculosis in the Adult. G. Costantini and C. Soglia.—p. 662.
*Primary Hilus Localization of Pulmonary Tuberculosis. L. Sagona.—p. 670.

Cutaneous Atrophic Striation in Pulmonary Tuberculosis.—Alessandri reports his observations in fourteen cases of cutaneous atrophic striation in patients with pulmonary tuberculosis and in patients with pulmonary disorders due to other causes. He discusses the pathogenesis of the symptom and calls attention to the many different theories in regard to the mechanism of the manifestations. The author inclines to the theory that for the determination of cutaneous atrophic striation one must predicate a constitutional factor, a local and general infective factor (associated with the micro-organism or with its toxic products), and an intense stimulus, greater than normal, where the atrophic striation appears.

Primary Hilus Localization of Pulmonary Tuberculosis.—Sagona points out that experimentally the penetration of tubercle bacilli in small doses or as ultravirus has a special predilection for the lymph nodes, in which a defense action is easily demonstrable. Such observations of an experimental nature may be verified in the clinic in contagion from small numbers of tubercle bacilli in early childhood. Tuberculous infections of endothoracic or extrathoracic origin show frequent pulmonary localization in the lymph nodes and particularly in the hilus, which fact makes it necessary to subject the conception of the primary pulmonary focus to a radical revision. The semeiotic inquiry does not throw any light on the subject although the roentgenologic examination, and particularly the roentgenogram, is in accord with these views, which explain better the beginning of tuberculous contagion in childhood and the mechanism of endogenic and exogenic reinfection in the adult.

Revista Española de Tuberculosis, Madrid

2: 131-270 (June) 1931. Partial Index

*Experiments on Surgical Treatment of Pulmonary Tuberculosis by Means of Thoracic Sympathectomy. C. Alvarez.—p. 241.
*Mycosis and Pulmonary Tuberculosis. A. Barbero.—p. 253.

Thoracic Sympathectomy in Pulmonary Tuberculosis.—Alvarez believes that thoracic sympathectomy, including the second, third and fourth intercostal thoracic ganglions, by depriving the lungs of the sympathetic nerve supply, will provoke a condition of constant vasodilatation in the lung, with resulting hyperemia, favorable for the healing of pulmonary tuberculosis. Simple resection of the second, third and fourth intercostal nerves gives only temporary results since the nervous connections are sooner or later restored. The opinion that there are sympathetic cells in the walls of the vessels, to reassume the functions of the sympathetic nerves, is erroneous. The operation is compatible with life. However, the author has not made experiments and suggests that his colleagues perform the operation on monkeys. The survival of the animals in good condition will indicate the adaptability of the operation for human beings. In the application of the method to man, one must be careful, having in mind the possible danger of provoking a condition of massive vasodilatation. An increased rate of sedimentation of the erythrocytes contraindicates the operation. The technic is easy, as performed in the cadaver. The author describes in detail the technic in its possible application to human beings.

Mycosis Complicating Pulmonary Tuberculosis.—To ascertain the incidence of mycosis as a complication of pul-

monary tuberculosis, Barbero made 259 cultures with sputum and 77 cultures with saliva from 54 patients with pulmonary tuberculosis. In 43 per cent of the sputum samples and in 21 per cent of the saliva samples the results were positive for fungi. The author also carried on clinical observations in two patients with the complication, both of whom were observed for a long time. The reports of the cases are given in detail. From the sputum of the patients the black Scopulariopsis organism was isolated. The intravenous injection of the organism into a guinea-pig killed the animal in seven days. The subcutaneous injection of the same organism caused the death of the guinea-pig in twelve days. In a severe case of pulmonary tuberculosis the brown Scopulariopsis organism was isolated from the sputum of the patient. The intraperitoneal injection of the organism killed the guinea-pig in fourteen days. The only lesions observed in the postmortem examination of the animals (both in those which received the injection with the black Scopulariopsis and in those which received the injection with the brown Scopulariopsis) were paleness of the spleen and marked multiple infarction of the lymph nodes. The author concludes that, in the respiratory tree of patients with pulmonary tuberculosis, fungi are frequently present; from the sputum of the patients, fungi can frequently be isolated. From the saliva of the same patients other yeastlike fungi can be isolated, although they are not so numerous as those found in the sputum. The fungi in the respiratory tract play the most important rôle in the chronicity of the processes of pulmonary tuberculosis, both by providing a mechanical irritative factor and by having a toxic action on the patient's general condition.

Deutsche medizinische Wochenschrift, Berlin

57: 1443-1486 (Aug. 21) 1931

Hemorrhage Following Expulsion of Placenta. H. Küstner.—p. 1443.
*Total Irradiation with Roentgen Rays. W. Teschendorf.—p. 1445.
Treatment of Tuberculous Diseases of Eye and of Its Surroundings by Means of Roentgen and Radium Rays. Hoffmann.—p. 1448.
Blood Transfusion with Merke's Apparatus. W. Flessa.—p. 1451.
Antirachitic Action of Cod Liver Oil in Form of Granulated Powder. G. Mansfeld and Z. Horn.—p. 1452.
Usability of Sodium Glycocholate for Bringing About Abundant Growth of Typhoid and Paratyphoid Bacilli in Blood Coagulum. O. Mündel.—p. 1454.
*Treatment of Migraine by Means of Hormone Preparations of Anterior Lobe of Hypophysis. Irma Klausner-Cronheim.—p. 1455.
Large Doses of Amidopyrine in Treatment of Postinfectious Increase in Temperature. Unverricht.—p. 1456.

Total Irradiation with Roentgen Rays.—Teschendorf stresses that only small doses can be applied in total irradiations. From 0.5 to 2 per cent of the unit skin dose is applied to the whole body from a distance of about 2 meters. Irradiation of the entire body with roentgen rays is helpful in diseases of the blood, particularly in leukemia. It produces more uniform and permanent improvements than irradiation of the spleen and it is helpful even in those cases in which roentgen therapy of the spleen has failed. A complete cure of leukemia has not been obtained by total irradiation but it does prolong the life of patients. In aleukemia, total irradiation has likewise been found helpful; but in this condition special precaution is necessary and the irradiations should be of short duration. In lymphogranuloma, total irradiation proved of no especial value. In skin diseases it is still difficult to formulate definitely the indications for total irradiation with roentgen rays. It was employed in psoriasis and in eczema, especially in patients with extensive lesions, in whom the field method proved inadequate, and also in patients that were refractory to all other forms of treatment. Especial attention is called to the fact that in women the total irradiation may influence the menses. In a woman, aged 43, the menses returned temporarily after having ceased for two years. In another woman with menorrhagia the menstruation was normal after the total irradiation. Several other women stated that menstruation set in several days too early. In order to eliminate the influence on menstruation the author later covered the ovarian region with a lead plate, but he is as yet not able to state whether it is effective. On the other hand, the observations about the influence on the menstruation may be of some significance for gynecology.

Treatment of Migraine by Means of Hormone Preparations of Anterior Lobe of Hypophysis.—On the basis of the observation that women suffering from frequent attacks of migraine often are entirely free from them during pregnancy and lactation, Klausner-Cronheim reasoned that perhaps the large quantities of the hormone of the anterior hypophysis that are found in the blood stream during pregnancy prevent the attacks. Accordingly she attempted to counteract migraine by oral administration of the hormone of the anterior lobe of the hypophysis. The patients, ten in number, all of whom had strenuous mental work, were given three times daily one tablet (450 mouse units) of the hormonal preparation. In three cases there was no effect whatever, but in seven cases the effects, as far as the attacks of migraine were concerned, were favorable; either the attacks ceased completely or were so much less severe and less frequent that the patients felt considerably relieved. However, in some of the patients menstrual disturbances set in, the menstruation commencing from four to seven days too early and also being more profuse; but the patients felt that to be relieved from the attacks of migraine more than compensated for the menstrual disturbance. In the conclusion the author expresses the opinion that if in seven out of ten patients the migraine attacks could be counteracted, her mode of reasoning must have been correct. The complete failure of the treatment in the other three cases is probably due to the fact that, although the symptoms were the same, the nature and etiology of these cases of migraine were different, and it might be possible that by the hormonal treatment the various forms of migraine could be differentiated. But even in those cases of migraine which apparently are due to a deficiency in hypophyseal hormone, hormone preparations should be administered with caution, so as to prevent unfavorable effects on the ovarian functioning; this applies especially to young girls.

Medizinische Klinik, Berlin

27: 1201-1234 (Aug. 24) 1931

*Roentgen Therapy in Puerperal Mastitis. J. Granzow.—p. 1201.
*Cerebral Symptoms in Chronic Arthritis. G. Katz.—p. 1204.
Application of Acetarsone in Pregnant Women and in the New-Born. E. Klaften.—p. 1208.
Life-Endangering Hemorrhage into Abdominal Cavity in Myoma. K. Abel.—p. 1212.
Self Experiments on Flow of Bile Following Administration of Magnesium Sulphate and of Fresh, Bottled and Artificial Karlsbad Water. M. Stern.—p. 1212.
*Typical Whooping Cough Checked by Infection with Measles. J. Tuscherer.—p. 1214.
Positive Seminal Vesicle Reaction Produced with Urine of Nonpregnant Women. E. J. Kraus.—p. 1215.

Roentgen Therapy in Puerperal Mastitis.—On the basis of his experiences with roentgen irradiation in twenty-one cases of puerperal mastitis, in nineteen of which it was successful, Granzow concludes that the early application of weak doses of roentgen rays is of great therapeutic value and does not cause injurious effects. As the optimal dose he recommends 10 per cent of the unit skin dose, which is estimated at 590 r. The quality of the applied rays is designated as hard, the number of kilovolts being 180 and the filter consisting of 0.5 mm. of copper and 0.5 mm. of aluminum. The size of the field generally is 8 by 10 or 10 by 15 cm. The cone of rays should strike not only the diseased part but also the surrounding area to an extent of from 3 to 4 cm. Although the results that have been obtained so far are satisfactory, in the future the author intends to try softer rays, which are more suitable for surface irradiation than the hard rays with their greater penetrating power.

Cerebral Symptoms in Chronic Arthritis.—In the first part of his report, Katz reproduces several photographs of patients with chronic arthritis and calls attention to the fact that in some persons with chronic arthritis the physiognomy is similar to that which is often noted in patients with chronic encephalitis. The stony masklike expression is the main characteristic. In some cases he also noted other manifestations that sometimes occur in chronic encephalitis, such as profuse salivation, hyperhidrosis, abnormal pigmentation and changes in the nails. In arthritis these symptoms are often ascribed to incretory disorders; however, it is also possible that they are the result of changes in sympathetic centers of the brain. The psyche of this group of patients with severe chronic arthritis also shows certain peculiarities. There is an emotionless euphoria, which expresses itself in great patience, an

unchangeable friendliness and a certain stiffness. There also is indecision, a lack of initiative and emotion, and some patients appear depressed. The speech of the arthritic patients sounds somewhat monotonous and is usually slow, but disturbances in the intelligence are not present. A certain similarity between the psychic aspects of these patients with arthritis and of patients with chronic encephalitis cannot be denied. However, the author does not wish to create the impression that these arthritic patients belong to the encephalitic group but only asks whether certain forms of arthritis may not be of neurocentral origin. He thinks that the striking symmetry of the affected joints indicates a neurocentral influence. In discussing the frequency of the cerebral symptoms in patients with chronic arthritis, he states that among twenty-six patients there were five in whom they were especially marked; twelve others showed the one or the other sign, and in the other nine there were no signs that indicated cerebral involvement.

Typical Whooping Cough Checked by Infection with Measles.—Tuscherer observed in two children, who had whooping cough during a whooping cough epidemic, that infection with measles checked the whooping cough. He does not try to explain this phenomenon but points out that it is not an impossibility that one disease is checked and even cured by another and cites as an example malariotherapy in dementia paralytica. After calling attention to the fact that formerly smallpox vaccination during whooping cough was recommended in the hope that the protracted course could thus be favorably influenced, he advises that measles convalescent serum should now be tried.

Wiener Klinische Wochenschrift, Vienna

44: 1069-1096 (Aug. 21) 1931

Observations on Cerebrospinal Fluid and Therapy of Syphilis. B. Dattner.—p. 1069.
Sectarianism in Medicine. L. Straber.—p. 1072.
Nature of Aseptic Osteonecroses. K. Weib.—p. 1077.
*Toxic Action of Ammonia Produced in the Organism. O. L. E. de Raadt. —p. 1079.
*Treatment of Anthrax. O. Scherefettin.—p. 1083.
Carcinoma of Esophagus and of Stomach. C. Sternberg.—p. 1084.
Curettage and Biopsy in Early Diagnosis of Carcinoma of Uterus. P. Werner.—p. 1085.
Various Forms of Epididymitis and Their Sequelae. H. Rubritius.—p. 1085.

Toxic Action of Ammonia Produced in the Organism.—De Raadt states that the ammonia poisoning which develops in uremia, in eclampsia and in diabetic coma not only gives clinical manifestations in the form of intoxication but can also be detected chemically. The uric acid content of the blood is considerably increased (toxic disintegration of the body cells), and the marked increase of lipoids (fatty acids, lecithin, free cholesterol and cholesterol ester) in the blood is the result of ammoniacal saponification of the lecithin from the cell lipoids.

Treatment of Anthrax.—Scherefettin reports his observations in the treatment of thirty-five persons with anthrax. He asserts that in cases of minor severity the patients may recover without treatment or the condition may be counteracted by local cauterization. However, persons with the severe forms of anthrax, especially those with extensive edema, require serotherapy. Case reports indicate that from 50 to 100 cc. of serum was administered partly intravenously and partly intragluteally. Anthrax septicemia and the pulmonary form, which formerly had a fatal outcome in most cases, could be checked by the early administration of large doses of serum. There can be no doubt that serotherapy is the most effective form of treatment of anthrax; however, its action mechanism is not entirely clear as yet, for anthrax serum is neither bactericidal nor antitoxic. The author thinks that its therapeutic action is due to the fact that it induces a leukocytosis. It acts as a sensitizer on the leukocytes and on the tissue cells of the diseased parts. In accordance with this assumption the author tried irritation therapy in cases of medium severity. He injected from 5 to 10 cc. of milk but was always ready to resort to serotherapy in the event that an exacerbation should set in. In one case the results of the milk injections were highly favorable, but in other cases the recovery was less rapid than following the administration of serum. In some cases it was helpful to combine serotherapy and protein therapy. In order to hasten cicatrization the acid-base equilibrium was influenced by including yogurt milk in the diet, and the results of this seemed to be favorable.

Zeitschrift für Kinderheilkunde, Berlin

51: 267-434 (Aug. 18) 1931

*Simultaneous Determination of Calcium and Phosphorus in Blood Serum of Nurslings Without Necessity of Sinus Puncture. E. Freudenberg. —p. 267.
Icterus Neonatorum Gravis. St. Kramsztyk.—p. 273.
*Etiology and Clinical Aspects of Acute Suprarenal Insufficiency (Hemorrhages and Hypoplasia of Suprarenals). T. Baumann.—p. 276.
Pathogenesis of "Acute Leukemia." R. Grosser.—p. 294.
Clinical Aspects of Terminal Stage of Pulmonary Tuberculosis in Children. D. Schenkmann and V. Russatje.—p. 309.
Anthropometric Studies on Development of Thorax in Children. J. Brock and Emmy Stemmler.—p. 322.
*Weight Increase of Children with Inactive Tuberculosis During Fresh Air Treatment. W. Kornfeld and H. Schüller.—p. 340.
Behavior of Size of Soft Parts During Fresh Air Treatment in Children with Inactive Tuberculosis. W. Kornfeld and H. Schüller.—p. 349.
Persistence of Weight Increases After Fresh Air Treatment of Children with Inactive Tuberculosis. H. Holzer and W. Kornfeld.—p. 363.
Behavior of Size of Soft Parts of Children After Discharge from Fresh Air Treatment. W. Kornfeld and D. Orosz.—p. 381.
Gold Therapy of Pulmonary Tuberculosis During Childhood. O. Wiese and L. Hindersin.—p. 396.
Observations on Blood Sugar Regulation in the New-Born. F. Haass. —p. 400.
Mechanical Registration of Heart Sounds in Premature and Full Term Infants. W. Gaus.—p. 409.
Peculiar Fluctuating Generalized Glandular Tumors of Unknown Etiology in a Boy Aged 11. O. Wiese.—p. 432.

Determination of Calcium and Phosphorus in Blood Serum of Nurslings.—Freudenberg recommends Warkany's modification of the Bell-Doisy-Briggs method and suggests some improvement. The micromethod which he describes permits one to determine the calcium content from 0.2 cc. of serum. For the simultaneous determination of both calcium and phosphorus only 0.8 cc. of serum is required, even if double analyses are made. The 0.8 cc. of serum can be extracted readily from 2 cc. of blood, and under anesthetization with ethyl chloride it is easy to obtain this quantity of blood from the heel of the infant by means of a small incision. Thus it is not necessary to make a sinus puncture.

Acute Suprarenal Insufficiency.—Baumann discusses the various theories on the etiology of suprarenal insufficiency in the new-born, in nurslings and in young children. He shows that suprarenal insufficiency in the various periods of life are not to be etiologically differentiated mainly according to age constitution and organ constitution so much as by the environmental influences characteristic for each age group. In the new-born, birth trauma and stasis in the cava system besides the special predisposition of the organ are the main causes, whereas the infectious-toxic-septic noxa is extremely rare. However, in later life infectious-toxic-septic factors with eventual predisposition of the organ are the primary causes, and cases in which stasis is the etiologic factor are rare. The author further compares the acute insufficiency in cases of hypoplasia of the suprarenals with the hypofunctioning of the islands of Langerhans in infantile diabetes mellitus. In the last part of the article four clinical histories are given. In one case one of the suprarenals showed calcification; in another patient, who died following pneumonia, there existed hypoplasia of the suprarenal cortex with acute insufficiency symptoms, and in two cases acute insufficiency was the result of suprarenal apoplexy of a septic-toxic pathogenesis.

Weight Increase of Children with Inactive Tuberculosis During Fresh Air Treatment.—On a material of 600 children from the Vienna children's hospital, who received fresh air treatment on account of inactive tuberculosis, Kornfeld and Schüller studied the increase in weight. When the children were divided without selection into several groups of equal number, according to the duration of their treatment, the averages of the weight increases showed only slight and irregular fluctuation. However, when groups of children were compared that had been selected according to certain biologic characteristics, certain regularities were observed. In general the girls showed a relatively better increase than boys, older children a better increase than younger children, and in those who in the beginning were considerably underweight the increase was more marked than in those who had been almost normal

or slightly overweight. However, occasionally there were exceptions to this rule, in that children who were considerably undernourished, in accordance with their constitutional type, gained only slightly or not at all. It was also frequently noted that the taller children showed a lesser increase in weight than the shorter ones; this the authors ascribe to the inherent differences between the pyknic and the asthenic constitutions.

Zentralblatt für Chirurgie, Leipzig

58: 2129-2176 (Aug. 22) 1931

*Plastic Surgery with Soft Parts to Effect Closure of Special Forms of Empyemic Cavities. R. Nissen.—p. 2130.
Thyroidal Hormone Not Effective Against Postoperative Thrombosis and Embolism. A. Troell.—p. 2132.
Rare Tumors on Nail Bed (Neuromyo-Arterial Glomus Tumors). H. Picard.—p. 2133.
Incarceration of Gallbladder in Umbilical Hernia. M. Köhler.—p. 2136.
Methods, Indications and Technic in Treatment of Hypertrophy of Prostate. J. P. Kruimel.—p. 2137.
Peritonitis Chronica Fibrosa Incapsulans (Zuckergussdarm): Case. Soekarjo.—p. 2145.
Treatment of Testis Retained in Inguinal Canal. V. Lieblein.—p. 2147.
Bronchus Stenosis Caused by Aspiration of Foreign Body. F. Jacoby.—p. 2149.
Gangrenous Appendicitis in Patient with Hemophilia. C. Prima.—p. 2152.

Plastic Surgery with Soft Parts to Effect Closure of Empyemic Cavities.—Nissen points out that there are some forms of empyemic cavities that cannot be completely obliterated, even by resection of ribs and by excision of the parietal pleural indurations, for there usually remains a small cavity at the posterior mediastinal angle. For the plastic obliteration of these residual cavities at the posterior mediastinal recess the author employs flaps that consist of the skin, the fat and the muscular elements of the long extensors of the back. The fat and muscle tissues are rolled up and placed in the cavity. The author describes the technic and also gives diagrams showing the various stages of the operation. He employed it successfully in two patients in whom several other surgical treatments had failed.

Zentralblatt für Gynäkologie, Leipzig

55: 2529-2592 (Aug. 22) 1931

*Roentgen Diagnosis of Intra-Uterine Death of Fetus. E. Kehrer.—p. 2530.
*Roentgenologic Indications for Interruption of Pregnancy. H. Naujoks.—p. 2540.
Prevention of Conception by Graefenberg's Ring. K. Sommer.—p. 2547.
History of Vaginal Contraception. Marie C. Stopes.—p. 2549.
Prevention of Conception and Clinical Instruction. W. Liepmann.—p. 2551.
Clinical Instruction in Prevention of Conception. R. Elkan.—p. 2555.
Is the Physician Justified in Refusing to Give Instruction About Contraception? E. Goldberg.—p. 2557.
Experimental or Practical Tests of Contraceptives? E. Grünhaut-Fried. p. 2560.
Prevention of Conception and the General Practitioner. F. Meder.—p. 2561.

Roentgen Diagnosis of Intra-Uterine Death of Fetus.—On the basis of roentgenograms of fetuses that died before birth, Kehrer concludes that there are certain signs from which one may suspect death of the fetus; if several of them concur, they constitute conclusive evidence for intra-uterine death. The most demonstrative signs of intra-uterine death are the superposition of the flat cranial bones in the manner of roofing tile, the shriveling of the cranial contents, the occipital prolongation of the head in the shape of an isosceles triangle, and the sharp angular bending of the vertebral column in the form of kyphosis, lordosis or scoliosis. Especially demonstrative is a sort of gibbous formation or a lordosis in the distal half, particularly in the sacral region of the vertebral column. All other roentgenologic signs that have been considered as indicative of intra-uterine death of the fetus do not have absolute demonstrative value, since they may occur also in different conditions. These symptoms are asymmetry of the cranium, flattening of the biparietal vault of the cranium, and the displacement of the face and the front of the fetus away from the center of the uterus and toward the wall of the uterus with simultaneous deflection of the spinal column. The author considers the steep elevation of one arm behind the occiput together with the lateral flexion and torsion of the cranium as the earliest sign of intra-uterine death, as a manifestation of the rigor mortis of the fetus, provided there are other signs that indicate death.

Roentgenologic Indications for Interruption of Pregnancy.—As indications for the interruption of pregnancy Naujoks considers: (1) the definite roentgenologic demonstration of a malformation that will make the child nonviable and (2) the erroneously performed direct irradiation of the fetus with large doses of roentgen rays during the first period of gestation. However, the fear of a roentgen injury of the ovum either in early or late fertilization is not sufficient reason for an interruption of pregnancy.

Sovetskaya Klinika, Moscow

15: 1-106, 1931

*Giardia Intestinalis. L. M. Lichta.—p. 11.
*Giardia Intestinalis in Biliary System. A. N. Volodin.—p. 18.
*Giardia Lamblia. L. F. Limcher and M. G. Traynin.—p. 30.
Bang's Disease in Man. M. S. Tinker.—p. 39.
Clinical Aspects of Typhoid. L. M. Meyerovich.—p. 51.
Infectious Exanthems of Undetermined Origin. N. J. Moroskin.—p. 58.
Serum Antivibrion Septique. I. N. Velikanov and E. N. Tolstukhlina.—p. 64.

Giardia Intestinalis.—Lichta, at Rostov, examined the duodenal contents of sixty-two patients and found that twelve of them harbored Giardia intestinalis. The protozoal group of diseases are usually found in the tropical or subtropical climates. The author finds that in some parts of Turkestan and Caucasia from 40 to 50 per cent of the population have a protozoal infection. Parallel with the infection of the intestinal and biliary system, the toxins of Giardia intestinalis may be carried by the blood stream throughout the entire body. In all cases of cholecystitis, ulcers of the stomach or intestine, chronic enterocolitis and appendicitis, the author advises search for Giardia intestinalis in the duodenal contents. The treatment with a combination of arsphenamine and methenamine brought permanent relief to three patients but unfortunately only temporary relief to others. A cholecystectomy may be performed in intractable cholecystitis. Treatment with arsphenamine and methenamine alleviates the pathologic condition and causes the flagellate to disappear or become avirulent and immobile. Examination of operative material (two cases) leads the author to believe it may be easier to treat Giardia intestinalis infections in the gallbladder and bile ducts than in the duodenum. The author believes that infection may follow the ingestion of contaminated food. Mice, rats, cats and dogs harbor Giardia intestinalis in the intestinal tract. The food or water may be contaminated directly, when the flagellate is carried by the agents themselves, or indirectly, when it is carried on the feet of the house-fly.

Giardia Intestinalis in Biliary System.—Volodin's observations cover three and one-half years of study. During this time particular attention was placed on the relation of Giardia lamblia to diseases of the liver, gallbladder and biliary ducts. A review of the literature and the results of his own experiments lead him to the following observations: Lamblia infections may be either the primary and etiologic, secondary and aggravating, or passive and temporarily harmless factors in disease. When the body loses its resistance, Giardia lamblia, a commensal, may become virulent and assume a pathogenic rôle. Ignorance of the rôle of the flagellate in diseases of the liver, gallbladder and bile ducts has often made clinical diagnosis unnecessarily difficult. On the other hand, recognition of the flagellate infection explains some asthenic and arthritic-pyknotic and vegetative stigmatic conditions. The author examined 172 patients with biliary diseases and performed fractional duodenobiliary drainage in 148 cases. Six and seven-eighths per cent harbored the flagellate in the biliary contents; when cholecystitis, cholangeitis and hepatitis were considered, the proportion was 10 per cent; whereas, in conditions of cirrhosis, neoplasm, echinococcus, as well as the so-called icterus infectiosus and icterus catarrhalis, the flagellate was never isolated. Clinically the flagellate proved to be the primary pathogenic agent in four of every ten cases of hepatic biliary disease and one of every two cases of gastrointestinal disease. In the diagnosis of disorders of the liver, gallbladder and bile ducts, the author advises duodenal drainage and examination of the contents before and after the intake of magnesium sulphate. No effective method of treating lamblia infections is known. From 25 to 33 per cent solution of magnesium sulphate, alone or in combination with quinine,

emetine, methenamine, acriflavine base and arsphenamine, seemed effective. The flagellate was removed in the process of emptying the gallbladder and draining the bile ducts and duodenum. The therapeutic instillation was made by mouth. The author believes that the experimental and clinical recognition that Giardia lamblia is an important pathogenic factor in gastro-intestinal and hepatobiliary infections should influence future hygienic and public health measures.

Giardia Lamblia.—Limcher and Traynin examined fifty-three patients whose condition indicated duodenobiliary drainage. Sixteen harbored Giardia lamblia and of these fifteen, or 93.75 per cent, had hepatitis, cholecystitis, and cholangeitis; four did not have the flagellate in the gallbladder. When the flagellate is found in the duodenobiliary contents and measures are taken against it the patient improves and the flagellates either decrease in number or disappear temporarily. The authors recommend a combination of emetine and magnesium sulphate as well as acetarsone and neoarsphenamine instilled through the duodenal tube. These treatments do not insure complete cure. The authors recommend further study.

Hospitalstidende, Copenhagen

74: 725-752 (July 2) 1931

Some Healing Processes in Tuberculosis in Right Upper Lobe. K. Isager.—p. 725.

*Sensibilization to Light with Acriflavine Base with Especial Reference to Local Treatment of Lupus. H. Videbech.—p. 737.

Local Treatment of Lupus.—Videbech reports four cases of lupus vulgaris in the oral cavity and throat given local arc light treatment after sensibilization with acriflavine base. The therapeutic effect of the sensitization was doubtful. In experiments in white rabbits, intravenous injections of acriflavine caused a noticeable macroscopic sensibilization to local irradiation of the skin with arc light. Tests of the light reaction in tissues sensitized by acriflavine, in excisions from irradiated rabbit ears, showed a relatively increased effect in the connective tissue.

74: 753-780 (July 9) 1931

*Heterologous Transplantation and Application in Determination of Lethal Dose for Human Lymphosarcomas. C. Krebs and Fanny Busch.—p. 753.

*Clinical Aspect of Malignant Tumors of Spinal Column. E. Thomsen.—p. 765.

Lethal Dose for Human Lymphosarcomas.—Krebs and Busch found that transplantation of human tumors into strongly irradiated rats and mice resulted in a considerable growth after six days. The greatest size was attained between the tenth and the twenty-first day, and after the twenty-fifth day new tumors did not appear. The lethal dose for human lymphosarcomas, tested by implantation of irradiated tumor tissue into irradiated mice, seemed to be approximately 2 unit skin doses, or apparently the same as for mouse lymphosarcomas.

Malignant Tumors of Spinal Column.—In Thomsen's first case the violent neuralgic pain in the back, pronounced albuminuria, anemia and general exhaustion, together with the roentgenograms, pointed to myeloma, and necropsy disclosed myelomas corresponding to the processes seen in the spinal column in the roentgenograms. In the second case with similar symptoms, roentgen diagnosis of tumor metastases in the spinal column, and clinical diagnosis of occult cancer, multiple myelomas were found at necropsy. In the third instance there was a tonsillar sarcoma followed by sarcomatosis, particularly of the bones, with early manifestation in the spinal column.

Hygiea, Stockholm

93: 529-576 (July 31) 1931

*Treatment of Anemia with Large Doses of Metallic Iron. G. Lindberg.—p. 529.

Daily Variations and Origin of Urobilinuria. E. B. Salén and B. Enocksson.—p. 553.

Treatment of Anemia with Large Doses of Metallic Iron.—Lindberg asserts that large doses of metallic iron (from 3 to 6 Gm. daily) in the form of powder before meals is well borne and effective in anemia of various kinds. Pulverized iron (ferrum reductum or pulveratum) is richer in iron and cheaper than other both organic and inorganic iron preparations and should be tried in all cases of simple anemia, postinfectious and posthemorrhagic anemias, the anemia of pregnancy and postpartum anemia, together with anemia in premature children. The iron is believed to stimulate the bone marrow and in certain graver cases also to substitute for the iron deficiency.

Svenska Läkaresällskapets Handlingar, Stockholm

57: 109-236, 1931

Exogenous and Endogenous Factors in Etiology of Nervous Diseases. R. Almqvist.—p. 113.

*Respiratory and Pulsatory Variations in Pressure in Spinal Subarachnoid Space and Significance in Diagnosis of Block. N. Antoni.—p. 119.

Experimental Studies in Hypnotism. J. Billström.—p. 167.

*General Disturbances as Result of Traumas of Skull: Changes in Spinal Fluid. R. Eeg-Olofsson.—p. 173.

Spiritualism, Mysticism and Excesses of Religious Nature as Cause of Mental Disease. B. Gadelius.—p. 185.

*Clinical Studies on Prognosis in Chronic Epidemic Encephalitis and Result of Treatment with Recurrent Fever: I. G. Höglund and V. H. Sjögren.—p. 204.

*Spontaneous Pneumothorax Due to Traveling Needle: Case. H. C. Jacobæus.—p. 234.

Respiratory and Pulsatory Variations in Pressure in Spinal Subarachnoid Space and Significance in Diagnosis of Block.—Antoni finds that rises of pressure of about 2 cm. on inspiration constitute a relative indication of block. Rises of 2 or 3 cm. or more occur almost exclusively in spinal block. Increases of over 4 cm. occur only in extradural block. In intradural block an increase of between 2 and 3 cm. may be seen but is sometimes absent. Intramedullary tumors of moderate size apparently show normal curves; in a case of extremely large glioma which filled and distended the dural sac the curve was also normal. In three out of ten cases of extradural block, the pressure was unchanged during the entire respiratory phase: in the other seven there was marked increase on inspiration. In several cases of intradural and of extradural block, a steplike increase of pressure was noted on inspiration, with standstill on expiration. Fifteen cases of certain block and six of doubtful block are reported in detail, with figures.

General Disturbances as Result of Traumas of Skull.—Eeg-Olofsson says that lumbar puncture in twenty-seven cases of trauma of the skull, done from two months to three years after the accident, revealed changes in the spinal fluid in fifteen. In eight cases there were changes in pressure, with rise in five and reduction in three, and in seven there was an increase in the globulin content, without increased cell count. The ability to work does not depend directly on the changes in the spinal fluid; individual characteristics play an important part.

Chronic Epidemic Encephalitis: Result of Treatment with Recurrent Fever.—Höglund and Sjögren report 182 cases of chronic epidemic encephalitis. Eighty-eight men and fifty women had had typical acute epidemic encephalitis, the majority in connection with epidemics of encephalitis in 1920 and 1921. Their study of the fifty-five cases in which recurrent fever treatment was not given shows the prognosis to be extremely poor in every regard, with marked tendency to progression of all neurologic symptoms, complete inability to work in 75 per cent, and a mortality of 38.2 per cent in an observation period of from one to ten years. Recurrent fever treatment, carried out in eighty cases, resulted in improvement during treatment in the akinetic symptoms, the hyperkinetic being usually less influenced and occasionally increased. During the subsequent months and years a notable subject and objective improvement was frequently observed, but on longer observation this improvement usually diminished and in many cases an aggravation of some or all symptoms set in. There was complete incapacity for work in 73.7 per cent of the cases. The mortality in this group in the observation period of from one to ten years was only 5 per cent.

Spontaneous Pneumothorax Due to Traveling Needle: Case.—In the case reported by Jacobæus, the needle is thought to have been introduced into the body by the patient's lying on it in sleep. The first roentgen examination, which revealed the pneumothorax, showed the larger part of the needle in the posterior wall of the chest; on the second examination five weeks later the needle was seen partly in the lung tissue, and three days later the foreign body was entirely in the lung. The needle was removed by the aid of thoracoscopy, by the insertion of a trocar and the use of biopsy scissors.

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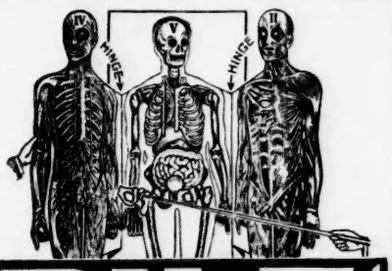

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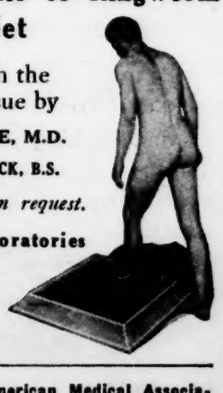

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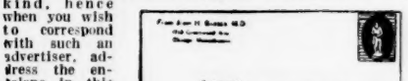

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